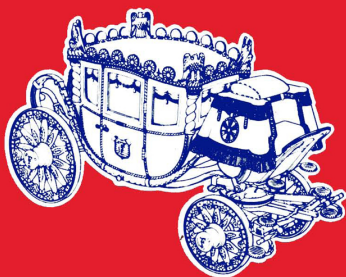


1976 **Fisher Body**



Service Manual

DAVE GRAHAM

Auto Literature, Inc.

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1976 FISHER BODY SERVICE MANUAL

FOR
ALL BODY STYLES
(EXCEPT "K" AND "T" BODIES)

This publication contains the essential removal, installation, adjustment and maintenance procedures for servicing all U.S. and Canadian built 1976 Fisher Body Styles except "K" and "T" Bodies. All information, illustrations, and specifications contained in this publication are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

Arrangement of the material is shown by the table of contents on the right-hand side of this page. Black tabs on the first page of each section can be seen on the edge of the book below section title. A more detailed table of contents precedes each section.



QUICK REFERENCE INDEX. To use, move either the hand or selection tool directly over the section you desire to reference. Simply click once with the mouse button and the manual will automatically jump to that section.

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SECTION 1

GENERAL INFORMATION

INDEX

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MANUAL DESCRIPTION**INTRODUCTION**

This publication contains essential removal, installation, adjustment and maintenance procedures for servicing all 1976 Fisher Body Styles except the "T" and "K" Body Styles. This information is current as of time of publication approval.

INDEX

The preceding page contains a "Table of Contents" which lists the section number and subject title of each main body area section. The first page in each main body area section has an index to the subjects included in that section.

PAGE AND FIGURE NUMBERS

All page numbers and figure numbers consist of two sets of digits separated by a dash. The digits preceding dash identify main body area section. Digits following dash represent consecutive page number or figure number within the particular body area section.

REFERENCE TABS

The first page of each section is marked with a ready reference black tab corresponding with table of contents page.

TEXT

Unless otherwise specified, each service procedure covers all body styles. Procedures covering specific styles are identified by style number, body series number, body type letter or similar designation. A description of these designations is covered in this section under "Model Identification".

ILLUSTRATIONS

Where possible, illustrations are placed in close proximity to accompanying text and should be used as part of the text.

MODEL IDENTIFICATION CHART

Division	Sales Name	Body Type	Series	Styles
Chevrolet	Chevelle Malibu	A	1AC	29-35-37-80
	Chevelle Malibu Classic	A	1AD	29-35-37-80
	Chevelle Laguna Type S3	A	1AE	37
	Chevelle Malibu Classic Estate	A	1AG	35
	Monte Carlo "S"	A	1AH	57
	Bel Air	B	1BK	35-45-47-69 (Canada only)
	Impala	B	1BL	35-39-45-47-69
	Caprice Classic	B	1BN	35-39-45-47-67
	Camaro	F	1FQ	87
	Camaro Type Lt	F	1FS	87
Pontiac	Vega	H	1HV	11-15-77
	Monza	H	1HM	07-27
	Monza 2 + 2	H	1HR	07
	Nova	X	1XX	17-27-69
	Nova Concours	X	1XY	17-27-69
	LeMans	A	2AD	29-35-37
	LeMans Sport Coupe	A	2AF	37
	Grand LeMans	A	2AG	29-35-37
	Grand Prix	A	2GJ	57
	Grand Prix	A	2GK	57
	Catalina	B	2BL	35-45-57-69
	Bonneville	B	2BP	35-45-47-49
	Bonneville Brougham	B	2BR	47-49
	Firebird	F	2FS	87
	Firebird Esprit	F	2FT	87
	Firebird Formula	F	2FU	87
	Firebird Trans Am	F	2FW	87
	Astre	H	2HC	11-15-77
	Astre Custom	H	2HV	11-15-77 (11-Canada Only)
	Sunbird	H	2HM	27
	Ventura	X	2XY	17-27-69
	Ventura "SJ"	X	2XZ	17-27-69

MODEL IDENTIFICATION CHART (Contd)

Division	Sales Name	Body Type	Series	Styles
Oldsmobile	Cutlass "S"	A	3AG	29-37
	Cutlass Supreme	A	3AH	35
	Cutlass Supreme	A	3AJ	29-35-57
	Cutlass Supreme Salon	A	3AK	29-57
	Cutlass Supreme Brougham	A	3AM	57
	Delta 88	B	3BL	39-57-69
	Delta 88 Royale	B	3BN	39-57-69
	Delta 88 Custom Cruiser	B	3BQ	35-45
	Delta 88 Custom Cruiser	B	3BR	35-45
	Ninety Eight Luxury	C	3CV	37-39
	Ninety Eight Regency	C	3CX	37-39
	Toronado Custom	E	3EY	57
Buick	Toronado Brougham	E	3EZ	57
	Starfire	H	3HT	07
	Starfire SX	H	3HD	07
	Omega F-85	X	3XS	27
	Omega	X	3XB	17-27-69
	Omega Brougham	X	3XE	17-27-69
	Century	A	4AD	29-37
	Century Custom	A	4AH	29-57
	Regal	A	4AJ	57
	Century Custom	A	4AK	35
	Estate Wagon	B	4BR	35-45
	LeSabre Custom	B	4BP	39-57-69
	Electra "225"	C	4CV	37-39
	Electra Limited	C	4CX	37-39
	Riviera	E	4EZ	87
	Skyhawk	H	4HT	07
	Skyhawk	H	4HS	07
	Skylark	X	4XB	17-27-69
	Skylark "SR"	X	4XC	17-27-69

MODEL IDENTIFICATION CHART (Contd)

Division	Sales Name	Body Type	Series	Styles
Cadillac	Fleetwood Brougham Sedan	C	6CB	69
	Calais	C	6CC	47-49
	DeVille	C	6CD	47-49
	Fleetwood Seventy-Five	D	6DF	23-33
	Eldorado	E	6EL	47-67
GM of Canada Pontiac	Laurentian	B	7BK	35-45-57-69
	Parisienne Brougham	B	7BL	57-69
GM Coach	Sprint	A	5AC	80
	Sprint Classic	A	5AD	80

MODEL IDENTIFICATION

INTRODUCTION

Due to variety of body styles available, certain body styles have been grouped in this publication as an aid to identification. These group designations may be used individually or in various combinations. In addition to model identification chart, an explanation of principal categories follows:

BODY SERIES NUMBER

The body series number identifies the following:

1. First Position - Division (ex. 1, Chevrolet; 2, Pontiac, etc.).
2. Second Position - Body Type (ex. 1A, Chevrolet "A" Body; 2A, Pontiac "A" Body, etc.).
3. Third Position - Division Series (ex. 1AC, Chevrolet "A" Body Chevelle Malibu; 2AD, Pontiac "A" Body LeMans, etc.).
4. The last two digits of the body series number indicate body style type as follows:

11	2-Door -	Notch Back - Pillar Coupe
15	2-Door -	Station Wagon - 2 Seat
17	2-Door -	Notch Back Coupe
23	4-Door -	Limousine with Auxiliary Seat
27	2-Door -	Notch Back - Pillar Coupe
29	4-Door -	Notch Back - Hardtop Sedan
33	4-Door -	Limousine with Auxiliary Seat and Center Partition Window
35	4-Door -	Station Wagon - 2 Seat
37	2-Door -	Notch Back - Hardtop Coupe
39	4-Door -	Notch Back - Hardtop (4 Window) Sedan
45	4-Door -	Station Wagon - 3 Seat
47	2-Door -	Notch Back - Hardtop Coupe
49	4-Door -	Notch Back - Hardtop (4 Window) Sedan
57	2-Door -	Notch Back - Hardtop Coupe
67	2-Door -	Convertible Coupe
69	4-Door -	Notch Back - Pillar (4 Window) Sedan
77	2-Door -	Plain Back - Pillar Coupe
80	2-Door -	Pick-Up Delivery
87	2-Door -	Plain Back - Hardtop Coupe

BODY STYLE NAME

Body style names are used for group classification as follows (style numbers suffix shown in brackets):

STYLE	DESCRIPTION
07 2-Door -	Plain Back - Pillar Coupe

1. Closed Style
 - a. Two-Door Coupe (07, 11, 27, 77)
 - b. Four-Door Sedan (69 Except "C" Body)
 - c. Limousine (23,33)
2. Hardtop
 - a. Sport Coupe Hardtop (37, 47, 57, 87)
 - b. Sedan Hardtop (29, 39, 49, C-69)
3. Station Wagon and Sedan Delivery
 - a. Station Wagon Two Seat (15, 35)
 - b. Station Wagon Three Seat (45)
 - c. Delivery (80)
4. Convertible Coupe (67)

BODY NUMBER PLATE

The body number plate identifies the model year, car division, series, style, body assembly plant, body

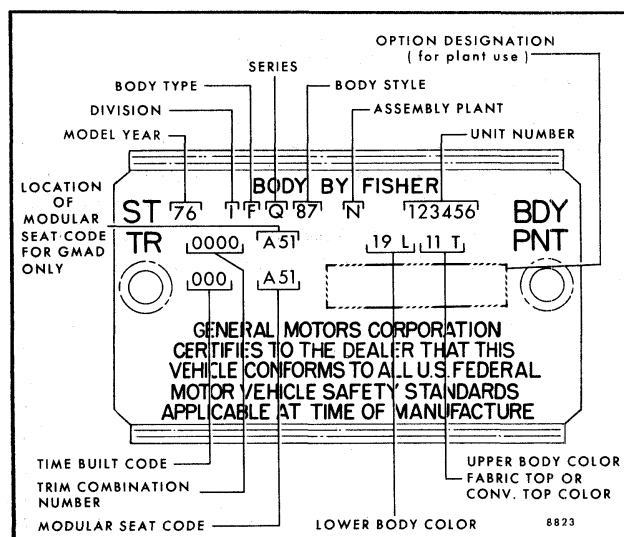


Fig. 1-1-Body Number Plate - U.S. Models

number, trim combination, modular seat code, paint code and date build code (Figs. 1-1 and 1-2). On all bodies except the "X", I.D. plate is located on upper horizontal surface of shroud. On "X" bodies, plate is located on vertical surface of shroud.

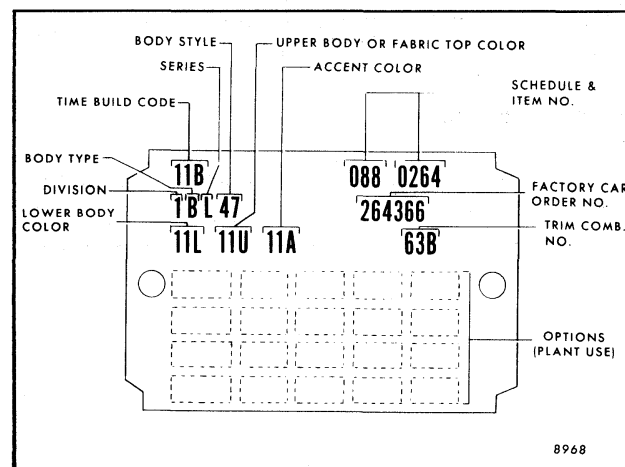


Fig. 1-2-Body Number Plate - Canadian Models

VEHICLE IDENTIFICATION NUMBER

The Vehicle Identification Number (serial number) is located on left front horizontal surface of instru-

ment panel which is visible from outside the car.

LOCK CYLINDER CODING

FIVE BITTING LEVEL LOCK CYLINDER AND KEY

All models are equipped with new lock cylinders and keys. The keyway has been revised so that prior model keys will not enter current model lock cylinders.

Two non-interchangeable keys are used on all styles. One key, identified by a square head and the letter "C" stamped on the shank, is used in all ignition lock cylinders.

The second key, identified by a round head and the letter "D" stamped on the shank, is used in front

doors, instrument panel compartment, console compartment, rear compartment and station wagon rear floor compartment lock cylinders.

Specific key identification is obtained from the four character key code stamped on the knock-out portion of the key head. On type "C" keys, codes range from 00A0 to 99A9 and 00B0 to 99B9. On type "D" keys, codes range from 00C0 to 99C9 and 00D0 to 99D9. This number identifies the lock combination and is used when ordering or making new keys. The "C" ignition key will not fit the front door lock cylinder and the "D" key will not fit the ignition lock cylinder.

After code number has been recorded by owner, plugs should be knocked out of key head. From these numbers, lock combination can be determined by use of a code list (available to owners of key cutting equipment from equipment suppliers). If key code numbers are not available from records or from the "knock-out" plug, lock combination (tumbler numbers and position arrangement) can be determined by laying key on diagram in Figure 1-3.

CUTTING KEYS

After the special code has been determined, either

from code list or Key Code Diagram (Fig. 1-3), cut blank key to the proper level for each of six tumbler positions, and check key in lock cylinder. The new key should agree with combination opposite code number in code list.

REPLACEMENT LOCK CYLINDERS

New lock cylinders are available from Service Parts Warehouses with new lock cylinder locking bar staked in place. Tumblers are also available and must be assembled into cylinder according to procedure outlined below.

ASSEMBLING AND CODING LOCK CYLINDERS

All Lock Cylinders Except Glove and Console Compartments

Tumblers for all locks except glove and console compartments are shaped exactly alike, with the exception of notch position on one side. As the key is inserted in lock cylinder, tumblers are raised to correct height so that notches on each tumbler are at

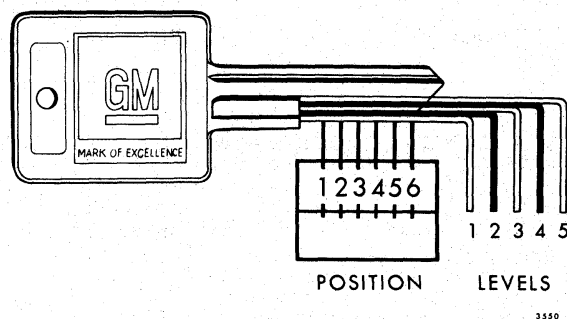


Fig. 1-3-Key Code Diagram

same level. When the notches on all six tumblers line up, locking bar is pushed into the notches by two small springs, allowing cylinder to turn in its bore. Five types of tumblers are used to make all various lock tumbler combinations and each is coded according to a number, 1 through 5, stamped on its side.

1. Determine lock cylinder tumbler numbers and tumbler arrangement by use of numerical key code lock cylinder code list. Code lists are made available to owners of key cutting equipment by equipment suppliers.

NOTE: To determine which tumblers should be installed in what position for a given key when a code list is not available, proceed as follows:

- a. Lay key on Key Code Diagram (Fig. 1-3) with key outlined by diagram as accurately as possible.
 - b. Starting at head of key blade, determine and record lowest level (tumbler number) that is visible in position number 1 and subsequent position numbers 2 through 6. After tumbler numbers and arrangement have been determined, assemble as outlined in following steps.
2. Starting at open end (head) of cylinder, insert tumblers in their proper slots in the order called for by the code, as shown in Figure 1-4.
 3. Pull out side bar with fingers so that tumblers will drop completely into place (Fig. 1-4). Insert one tumbler spring in space provided above each tumbler.

CAUTION: If the springs become tangled, do not pull them apart - unscrew them.

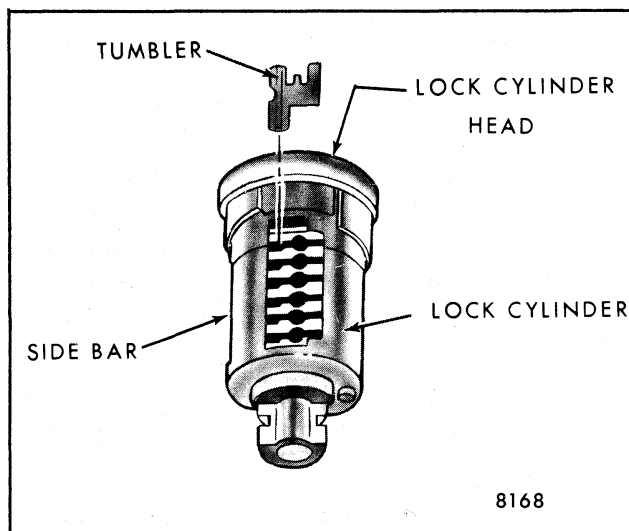


Fig. 1-4-Installing Tumblers

4. Insert spring retainer so that two end prongs slide into the slots at either end of cylinder. Press retainer down (see Fig. 1-5).
 5. To determine if tumblers have been properly installed, insert key into lock cylinder. If tumblers are installed properly, side bar will drop down. If bar does not drop down, remove key, spring retainer, springs and tumblers and reassemble correctly.
- CAUTION:** If tumblers have not been assembled correctly, they can be removed from cylinder by holding cylinder with tumbler slots down, pulling side bar out with fingers and jarring cylinder to shake tumblers out. This procedure is necessary because once tumblers have been pressed down into the cylinder they are held in their slots by side bar.
6. If, after checking, it is found that lock cylinder is assembled properly, remove key and secure cylinder in a vise with spring retainer exposed.

CAUTION: Use leather or wood at each vise jaw to prevent damage to cylinder.

7. Using suitable staking tool, stake spring retainer securely in place by staking cylinder metal over retainer at each end. Refer to Figure 1-5.

ASSEMBLING AND CODING GLOVE AND CONSOLE COMPARTMENT LOCK CYLINDERS

All styles utilize a lock cylinder with snap-in tumblers for all glove and (if so equipped), console compartment locks. These lock cylinders have five

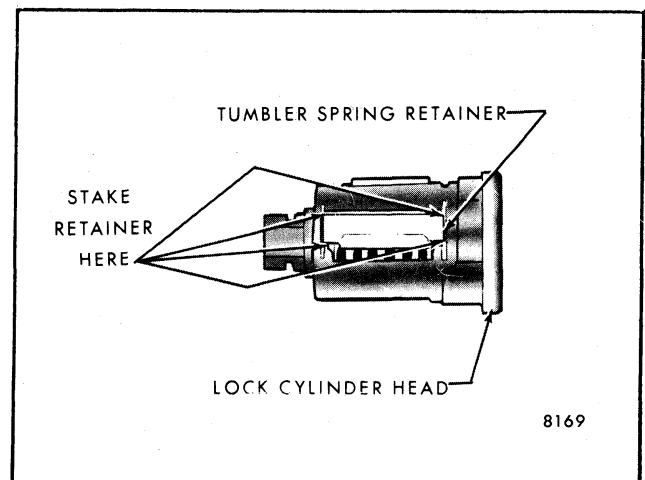


Fig. 1-5-Installing Spring Retainer

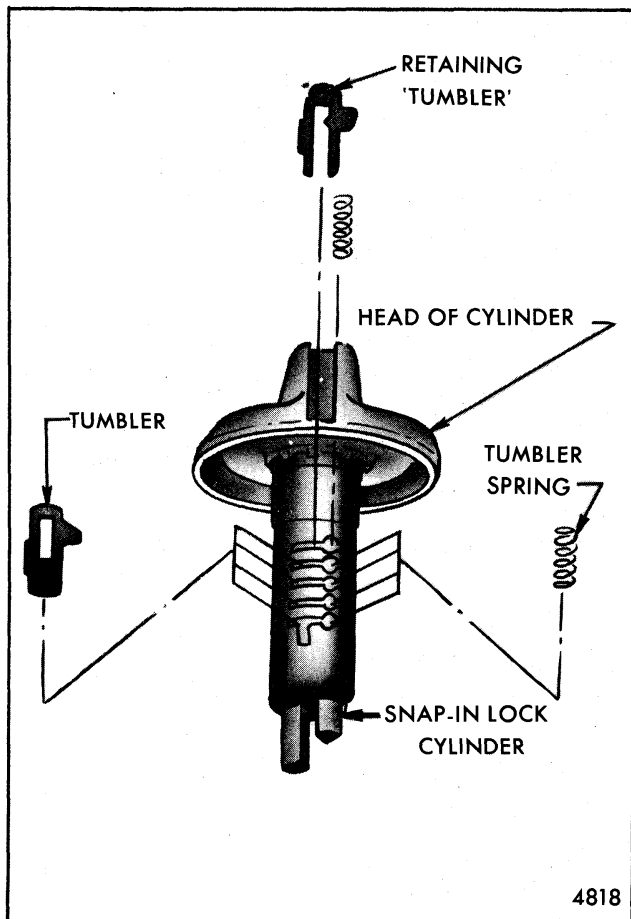


Fig. 1-6-Installing Tumblers

positions and four tumblers. The number 1 position (closest to cylinder head) is a brass retainer "tumbler". The 2 through 5 positions are standard tumbler positions.

The snap-in type cylinder is used only for the glove or console compartment. Therefore, lock cylinder components, including cylinders, tumblers, retainer "tumblers" and tumbler springs are not interchangeable for any other lock cylinder application. All individual components for servicing the snap-in cylinder are available separately from the Service Parts System.

1. Determine lock cylinder tumbler numbers and tumbler arrangement by use of numerical key code lock cylinder code list. Code lists are made available to owners of key cutting equipment by equipment suppliers.

NOTE: To determine which tumblers should be installed in what position for a given key when a code list is not available, proceed as follows:

- a. Lay key on Key Code Diagram (Fig. 1-3)

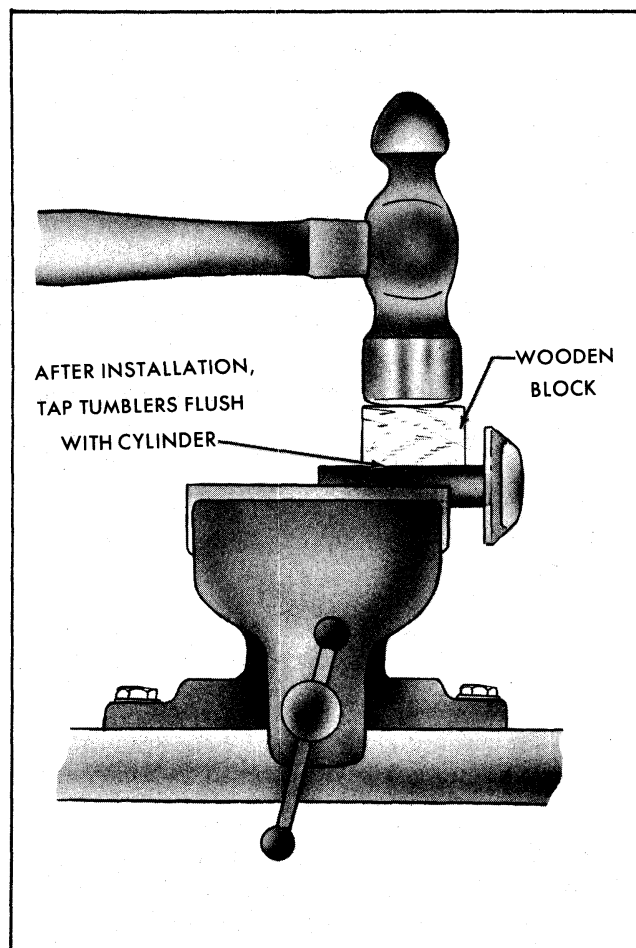


Fig. 1-7-Locking Tumblers in Place

with key outlined by diagram as accurately as possible.

- b. Starting at head of key blade, determine and record lowest level (tumbler number) that is visible in position number 1 and subsequent position numbers 2 through 5. After tumbler numbers and arrangement have been determined, assemble as outlined in following steps.
2. Starting at open end (head) of cylinder, insert tumbler spring and retainer "tumbler" in first position, then proceed to insert tumbler springs and tumblers in their proper slots in the order previously determined by code, as shown in Figure 1-6.
3. Place cylinder in vise, tumblers up, using leather or wood at each vise jaw to prevent damage to cylinder.
4. Place small wooden block flat on exposed tumblers and tap tumblers down flush with cylinder as shown in Figure 1-7.

WOOD GRAIN TRANSFERS (STATION WAGON STYLES)

DESCRIPTION

Wood grain transfers on station wagon styles are of all vinyl construction and are designed to secure to an acrylic painted surface by means of a pressure sensitive adhesive. The vinyl transfers are partially translucent and allow a degree of body color to show through and possess a 50 degree or semi-gloss finish.

Service replacement transfers are available through service warehouses in roll stock form of suitable size. When placing orders for transfers, carefully indicate "Division", "Model Year", "Body Style" and applicable car panel usage.

Use of wetting solution aids the repairman to lift and to position the transfer during installation. Wetting solution also ensures a better bond between transfer and body.

Prepare wetting solution, called out in procedure, by adding 1/4 ounce of detergent (Joy, Vel or equivalent) to one gallon of clean water.

Vinyl transfer replacement involving collision damage, or damage to underlying acrylic paint finish requires that metal repair and/or refinish operations be carried to completion before transfer is installed.

For quality results, the temperature of transfer, panel surface and work room should be at least 65 degrees or warmer. Transfers should not be replaced in temperatures below 65 degrees F. Transfers lose workability features in cold temperatures and may crack in these temperatures.

A proper squeegee sequence is of utmost importance. Start at top center of transfer. Progress to right and left from center to establish alignment across top. Then squeegee downward from this position in small increments all the way across transfer as described in Figure 1-8 and in this procedure.

Use firm, short, overlapping squeegee strokes to drive out all water and air while achieving maximum bond of transfer.

Removal of all blisters and proper attention to edge detail makes for a quality installation.

Use of heat is sometimes required at specific locations. This should be done with extreme care. Never use heat until all surrounding sections of a transfer are secured. Heat softens and stretches the transfer.

The following equipment and materials are necessary in making a quality transfer installation. Equivalent products can be used.

1. Wetting solution - prepare by mixing water and liquid detergent (Joy, Vel or equivalent).
2. Wax and silicone remover - Prep-Sol, Pre-Kleano, Acrylic-Clean or equivalent.
3. 3-M Vinyl Trim Adhesive or equivalent; brush or spray-can.
4. Squeegee - 4" to 5" wide, plastic or hard rubber. Deburr sharp and rough edges to prevent scratching.
5. Water bucket and sponge.
6. Sandpaper, No. 360 or No. 400, wet-or-dry type.
7. Infra-red heat bulb and extension cord.
8. Clean wiping rags or paper towels.
9. Sharp knife.
10. Scissors.
11. Fine pin or needle.

Removal

1. Remove necessary moldings. For molding removal procedures refer to the following section of this manual:
 - a. Front End - Section 4 (Front Fenders - "H" Bodies only)
 - b. Doors - Section 5
 - c. Rear Quarters - Section 6
 - d. Rear End - Section 7
2. Wash and clean repair surfaces, adjacent panels and openings as required.
3. Remove transfer finishing moldings, molding attaching clips, handles, side marker lamps and/or other transfer overlapping parts.
4. Remove affected transfer by starting at one edge and by peeling transfer as sheet from surface. Application of heat to affected transfer at point of removal aids removal operation.

CAUTION: Do not use pointed or sharp instrument during transfer removal. Avoid gouging underlying paint finish.

Installation

1. Scuff-sand acrylic painted surface with No. 360 or No. 400 sandpaper by dry sanding. Freshly painted surfaces must be allowed to dry thoroughly. Residual solvents in fresh paint can lead to subsequent blistering problems.
2. Clean acrylic painted surface with wax and silicone remover, such as Prep-Sol, Pre-Kleano, Acryli-Clean or equivalent. Wipe surface with clean cloth, and allow to dry. Use compressed air to blow away loose dirt from area of repair.
3. Prepare transfer for installation from "paper template" to be made as follows:
 - a. Tack-tape a suitable sheet of paper at top to outer panel aligning top of paper with centers of upper horizontal molding attaching clip holes. This represents the final upper trim line.
 - b. With template flush to panel, mark front, rear and bottom edges of panel on template.
 - c. With template on table, draw another line outboard of front, rear and bottom panel edges approximately 5/8 to 3/4 inches from panel edges. Remove excess paper beyond front, rear and bottom trim line.
 - d. Punch small hole at "front" vertical edge of template to denote front. Also mark "inner side" on underside of template.
4. Unroll and position service transfer on table with backing paper on top and with outer woodgrain pattern running from left to right.
5. Position prepared template on service transfer and mark perimeter "cut line" on backing of service transfer. Be sure that inner side of template is up and that woodgrain pattern runs from left to right before marking trim line on service transfer.
6. Cut out service transfer along trim line as required.
7. Position transfer to repair panel, centering transfer for proper vertical and lateral alignment. Center-mark transfer and panel accordingly (Fig 1-8).
8. Peel paper backing from transfer and lay transfer, face down, on clean table.
9. Using clean sponge, apply ample wetting solution to transfer adhesive and to repair panel surface.
10. Center and align upper edge of transfer with center of upper horizontal molding clip holes and press down lightly across top. Squeegee transfer firmly at center for distance of three to four inches (width of squeegee). Then, squeegee upward over same spot.
11. Raise one side of transfer from panel up to secured spot at top-center. Position transfer close to panel along clip attaching holes and, working from center, squeegee transfer into place. Use firm, short, overlapping strokes. Squeegee "laterally" first and then "up" when working across top. Complete securing opposite, upper edge of transfer in similar fashion.
12. With one hand, lift the unsecured lower area of transfer from panel. If transfer sticks prematurely, break bond with fast, firm pull. Position transfer close to panel at center and squeegee "downward" for short distance (approximately two inches). Then squeegee laterally over same spot. Repeat this operation working toward each end of panel. Continue bonding of transfer with firm, overlapping strokes. Example of squeegee progression is shown in Figure 1-8.
13. Apply soapy wetting solution periodically to panel to facilitate raising and positioning transfer during squeegee operations.
14. Work progressively downward in small increments completely across transfer as shown in Figure 1-8.
15. Cut 90 degree notches in transfer edges at lower corners as required. Cut "V" notches in transfer sides where necessary.
16. Apply light coating of vinyl trim adhesive to door hem flanges and to rear body lock pillar facing where surface is covered by transfer. Avoid use of excessive adhesive.
17. With heat lamp, heat inboard side of door hem flanges (or body lock pillar facing, etc.) and edges of transfer film (to approximately 90 degrees F).
18. Fold ends of transfer over door hem flanges (or over corners at panel ends) and press to secure edges of transfer to panel surfaces. Avoid undue pulling or stretching at ends as tearing could result.
19. Apply heat to transfer at door handle holes, side marker lamps and other depressions. Press transfer uniformly into depressions to obtain formed bond.

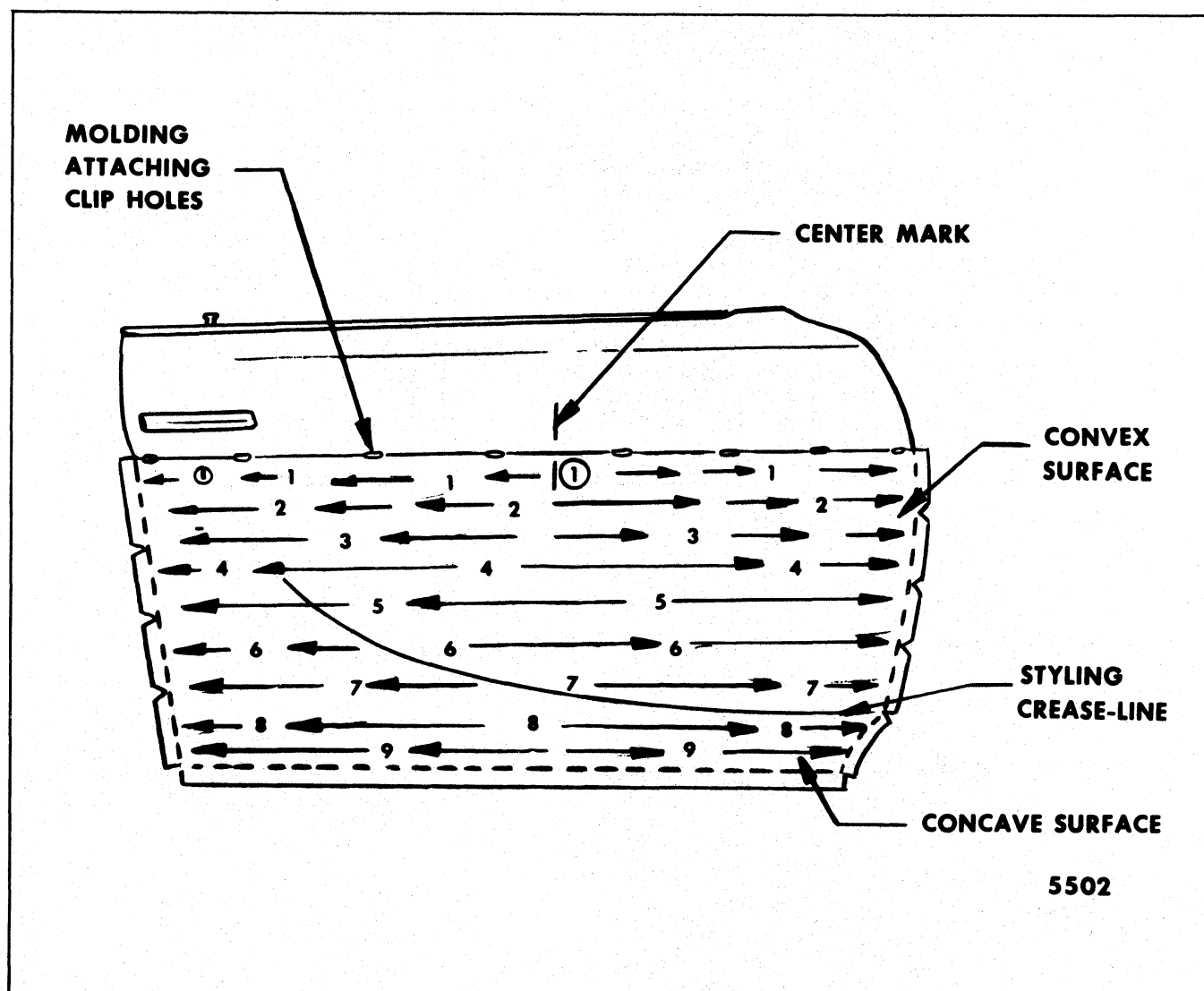


Fig. 1-8-Transfer Installation Sequence (Right Front Door Shown)

20. With sharp knife, carefully cut out excess transfer at side marker lamps, door handle holes, and other openings in panel.
21. Inspect transfer installation from critical angle using adequate light reflection to detect any irregularities that may have developed during installation. Remove all air or moisture bubbles by piercing each at an acute angle with a fine pin or needle and by pressing the bubble down.
22. Install previously removed parts and clean up car as required.

LUBRICATION

GENERAL MAINTENANCE

The mechanical parts of the body that have contacting surfaces which operate in relative motion with other body parts are lubricated during assembly. To maintain ease of operating effort, it is recommended that these parts be lubricated on a periodic basis with lubricants as follows:

1. All hinges (door, compartment lid, tailgate and back door), locks (door, compartment lid, tailgate, hood and back door), torque rods (compartment lid, back door and "H" style tailgate) are to be lubricated every six months with Auto-Lube "A", Part No. 1050110, Spray-Lube "A" Part No. 1050520, 3M Lithium Spray Lub No. 8915, or equivalent.

2. The lubrication requirements for seat mechanism, door window hardware, convertible top mechanism, tail gate hardware, and windshield

wipers are covered in the specific body area sections in this manual.

BODY SEALING

DESCRIPTION

Figures 1-9, 10 and 11 are illustrations of typical front end and underbody assembly plant sealer applications. These sealers are applied at major and/or sub-assembly panel joints and prohibit foreign substance (water, noise, exhaust gases, etc.) from entering the interior of the vehicle. If during service operations a particular sealing area is disturbed, it must be restored using a sealer which is applicable for that location.

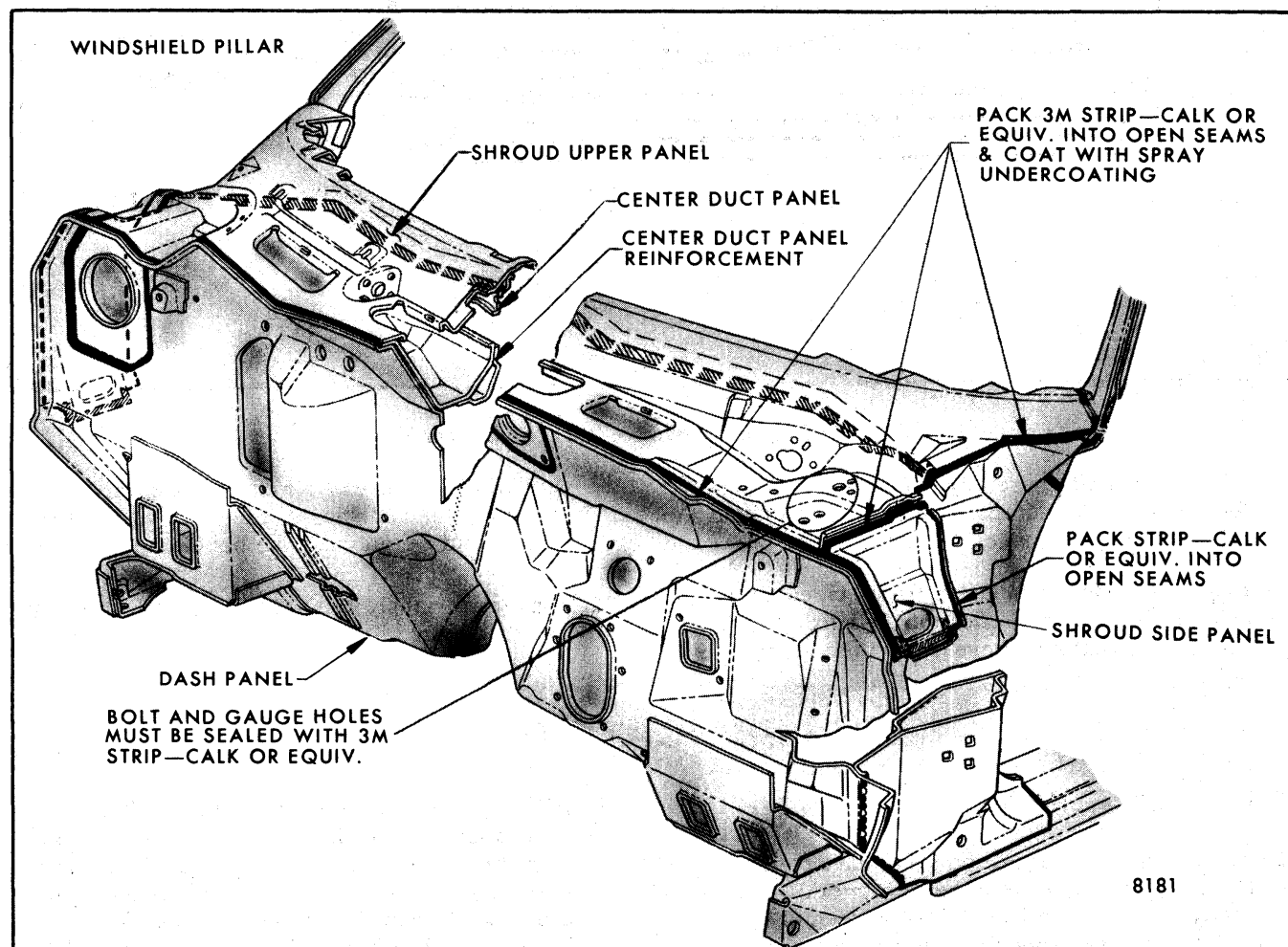
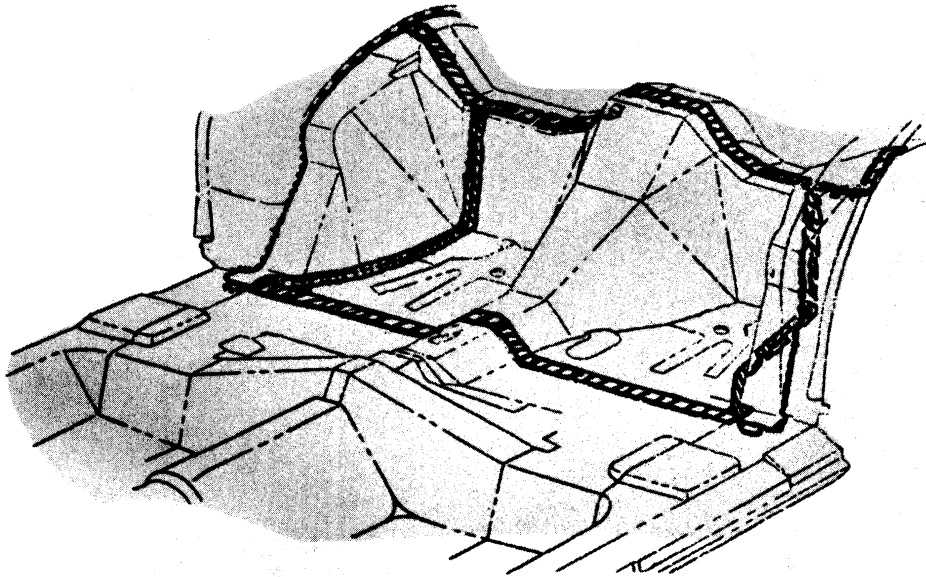
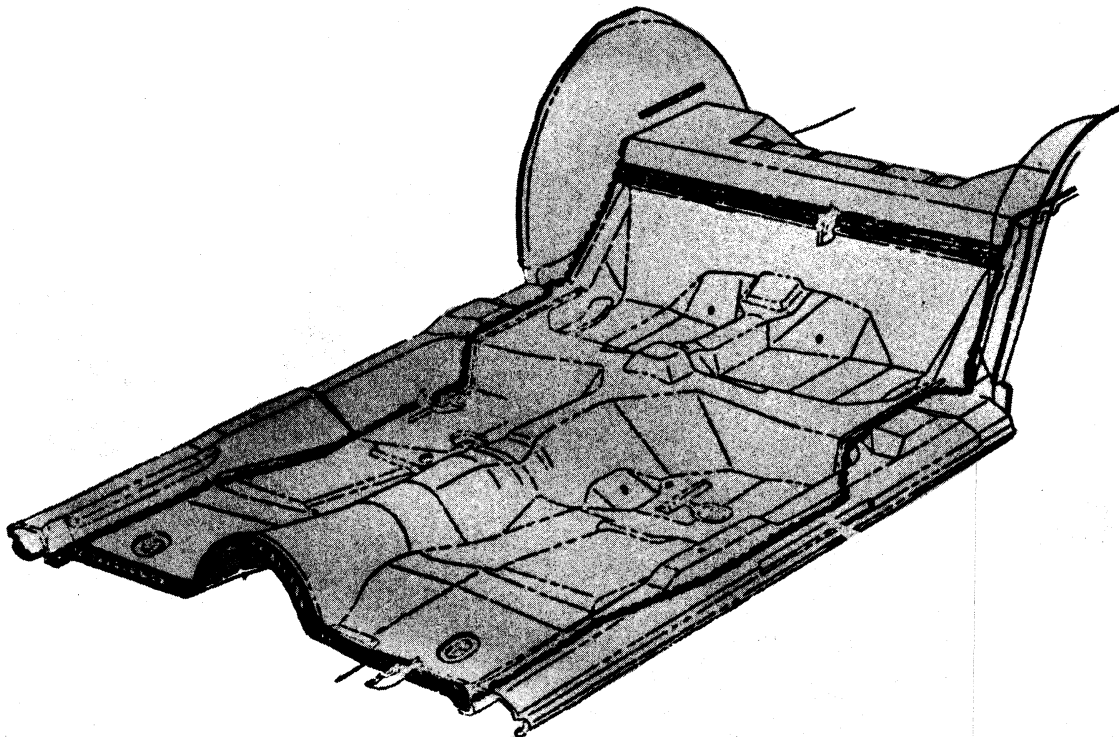


Fig. 1-9-Front End Sealing - Typical



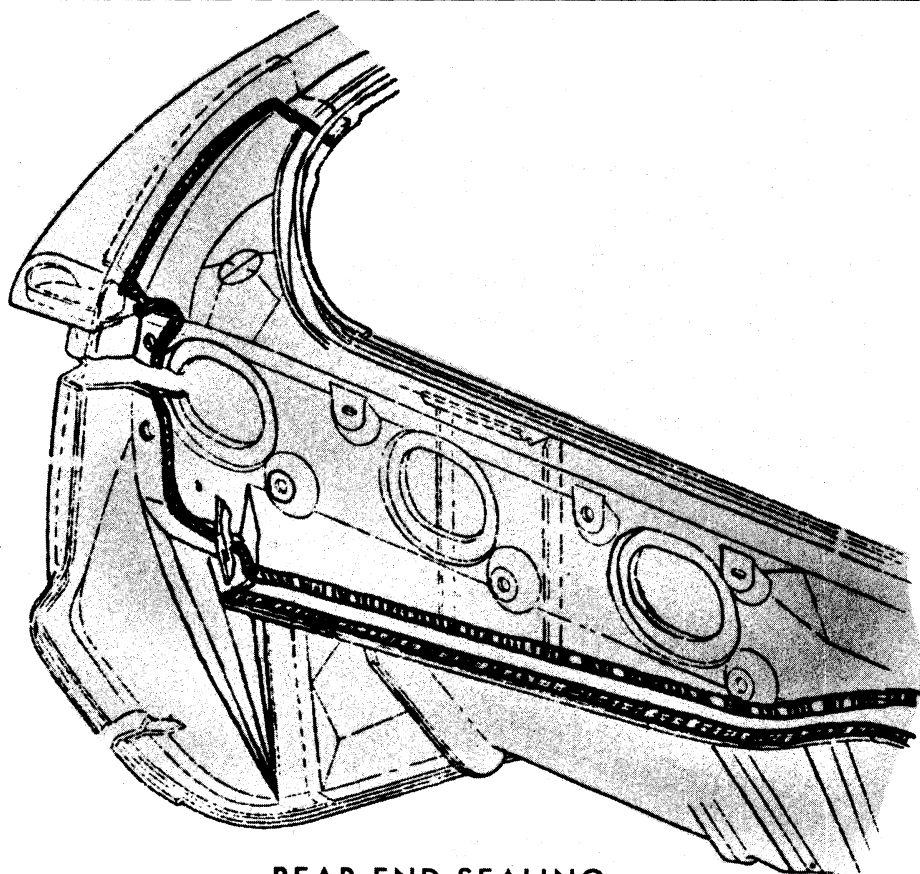
REAR SEAT PAN SEALING



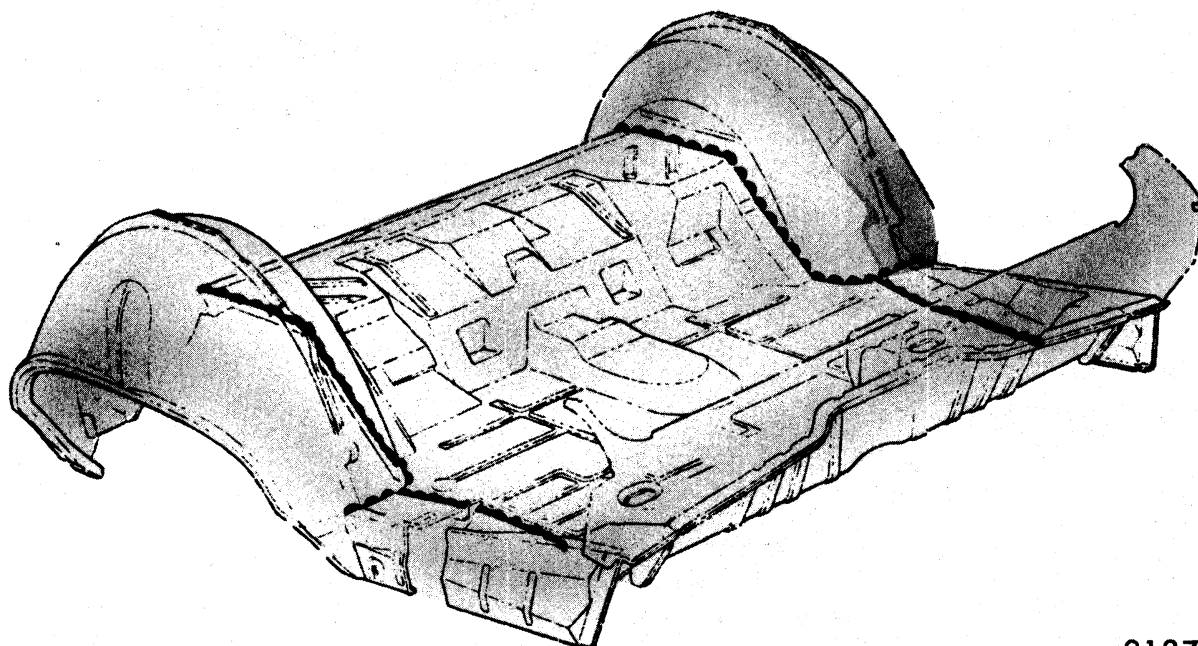
FLOOR PAN JOINT SEALING

9075

Fig. 1-10-Floor Pan Sealing - Typical



REAR END SEALING



REAR COMPARTMENT SEALING

9127

Fig. 1-11-Rear Compartment and Rear End Sealing (Typical)

METAL REPLACEMENT PARTS FINISHING

INTRODUCTION

Metal service replacement parts (or assemblies) are painted with a black, high-bake factory primer. For proper adhesion of color coats in service, the following refinish steps are necessary.

Procedure

1. Wash part with paint finish cleaning solvent.
2. Scuff sand panel lightly with No. 500 sandpaper, dry. Avoid cut-thru's. Rewash part.
3. Apply best sealer available. Apply according to label directions.
4. If necessary, apply primer-surfacer and sand smooth for required surface.

5. Apply color coats as required.

Prior to replacing exterior body parts or assemblies, check condition of paint on all "covered" or "hidden" interior panels. If powder or scale rust is encountered in these areas, proceed as follows:

1. Remove rust with suitable wire brush, abrasive or liquid rust removing agent. Follow directions.
2. If necessary, wash with detergent, rinse and dry.
3. Apply a heavy coating of anticorrosion compound (G.M.P.D. Part No. 1051685, 16 gal.; 1051686, 55 gal.; or 1052096, Aerosol or equivalent) to all cleaned hidden surfaces before installing exterior body parts. Also, apply anticorrosion compound to entire inner surfaces of exterior body parts being installed.

INTERIOR PLASTIC TRIM PARTS FINISHING

INTRODUCTION

Paintable plastic trim components as used on General Motors interiors can be divided into three general types:

1. Polypropylene Plastic
2. ABS Plastic
3. Vinyl Plastic

It is important for a painter to be able to identify each plastic in order to paint it satisfactorily. Painting of complete soft seat cushion and seat back trim cover assemblies of vinyl construction is not approved by the factory. Excluding the soft seat cushion and seat back trim cover assemblies, the plastic used most widely on the interior of bodies is "POLYPROPYLENE".

Tests for Plastic Identification

The purpose of the following tests is to determine the identity of a given plastic so that proper paint procedures and materials can be used.

Test for Polypropylene and ABS Plastic

To determine if a service part to be painted is "poly-

propylene" or "ABS" plastic, perform the following "burn" test:

1. From a hidden backside portion of the part, remove a sliver of plastic with a sharp blade.
2. While holding the sliver of plastic with tweezers or laying it on a clean noncombustible surface, ignite the plastic.
3. Observe the burning plastic closely:
 - a. "Polypropylene" burns with no readily visible smoke.
 - b. "ABS" plastic burns with a readily visible black smoke residue which hangs temporarily in the air.

Test for Vinyl Plastic

To determine if a part to be painted is "vinyl" plastic (polyvinyl chloride), a copper wire test may be performed as follows:

1. Heat a copper wire in a suitable flame such as provided by a propane or equivalent torch until the wire glows (turns red).
2. Touch the heated wire to the backside or hidden surface of the part being tested in a manner so as to retain some of the plastic on the wire.

3. Return the wire (and retained plastic) to the flame and observe for a green turquoise blue flame. A flame in this color range indicates that the plastic being tested is "vinyl".

PROCEDURE FOR PAINTING POLYPROPYLENE PLASTIC PARTS

Description

The system for painting polypropylene parts involves the use of a special primer. Since polypropylene plastic is hard, it can be color coated after prime with conventional interior acrylic lacquer.

CAUTION: *It is essential that the service part be primed first with a coating of special Polypropylene Primer according to factory recommendations. Failure to use the required primer as directed will result in color coat "lifting" and/or "peeling" problems. Use G.M.P.D. Polypropylene Primer, Part No. 1051497, or equivalent.*

Procedure

1. Wash part thoroughly with paint finish cleaning solvent, such as Acryli-Clean, Pre-Kleano, Prep-Sol or equivalent. Follow label directions.
2. Apply a thin, wet coat of polypropylene primer according to label directions. Wetness of primer is determined best by observing gloss reflection of spray application in adequate lighting. Be sure primer application includes all edges. Allow primer to flash dry one minute minimum and ten minutes maximum.
3. During the above flash time period (1 to 10 minutes), apply conventional interior acrylic lacquer color as required and allow to dry before installing part. Application of color during above flash time range promotes best adhesion of color coats.

PROCEDURE FOR PAINTING RIGID OR HARD ABS PLASTIC PARTS

Description

Rigid or hard ABS plastic requires no primer. Conventional interior acrylic lacquers adhere satisfactorily to hard ABS plastics.

Procedure

1. Wash part thoroughly with a paint finish clean-

ing solvent, such as Acryli-Clean, Pre-Kleano, Prep-Sol or equivalent.

2. Apply conventional interior acrylic lacquer color according to trim combination (see paint supplier color chart for trim and color code).
3. Allow to dry and then install part.

NOTE: Apply only sufficient color for proper hiding to avoid wash out of "grain" effect.

PROCEDURE FOR PAINTING VINYL AND FLEXIBLE (SOFT) ABS PLASTIC PARTS

Description

The outer "cover" material of "flexible" instrument panel cover assemblies is made mostly of ABS plastic modified with PVC or vinyl. The same is true of many "padded" door trim assemblies. The soft cushion padding under ABS covers is urethane foam plastic.

The most widely used "flexible" vinyls (polyvinyl chloride) are coated fabrics as used in seat trim, some door trim assemblies, headlinings and sun visors. Most head restraints are covered with "flexible" vinyls. Examples of "hard" vinyls are door and front seat back assist handles, coat hooks and exterior molding inserts.

The paint system for vinyl and flexible ABS plastic involves the use of interior vinyl color and a clear vinyl top coat.

NOTE: No primer or primer-sealer is required.

Procedure

1. Wash part thoroughly with a vinyl cleaning and preparation solvent, such as Vinyl Prep, Vinyl Prep Conditioner or equivalent. Wipe off cleaner while still wet with clean, lint-free cloth.
2. Immediately after wiping surface dry, apply interior vinyl color in wet coats allowing sufficient flash time between coats. See label directions. Use proper vinyl color as designated by interior trim combination.
3. Before color flashes completely, apply one, wet double coat of vinyl clear top coat. Use top coat with appropriate gloss level to match adjacent similar components. When painting instrument panel covers use "nonglare" clear vinyl. The clear coat is necessary to control the gloss requirement and to prevent "crocking" (rubbing-off) of the color coat after drying.

4. Allow to dry according to label directions before installing part.

NOTE: Apply only sufficient color for proper hiding to avoid wash out of "grain" effect.

AVAILABILITY OF COLORS FOR PAINTING INTERIOR PLASTIC PARTS

Interior colors are color keyed to "Trim Combination Numbers" located on the body number plate.

"Conventional" interior acrylic lacquer colors are designed for use only on hard trim parts, such as:

1. Steel parts (primer or sealer required on new service parts)
2. Hard ABS plastic (NO primer necessary)
3. Hard polypropylene plastic ("Special Primer" required)

Each major paint supplier provides an interior color chart which identifies the stock number, color name, gloss factor and trim combination number for each conventional interior color.

Vinyl interior colors are designed for soft trim parts such as instrument panel cover assemblies, upper door trim assemblies and head restraints. These colors require a final top coat of clear vinyl. Instrument panel covers require a "nonglare" final top coat. Other trim parts require a degree of gloss to match similar adjacent parts. Use interior vinyl colors and clear vinyl finishes such as Ditzler Uticolor Vinyl Spray, American Jetway UR-1 Vynicolor or equivalents.

SPECIAL BODY TOOLS

The illustrations on the following pages list special body tools that are recommended as aids in servicing

the various body components. It is to be noted that these tools may be substituted with equivalents.

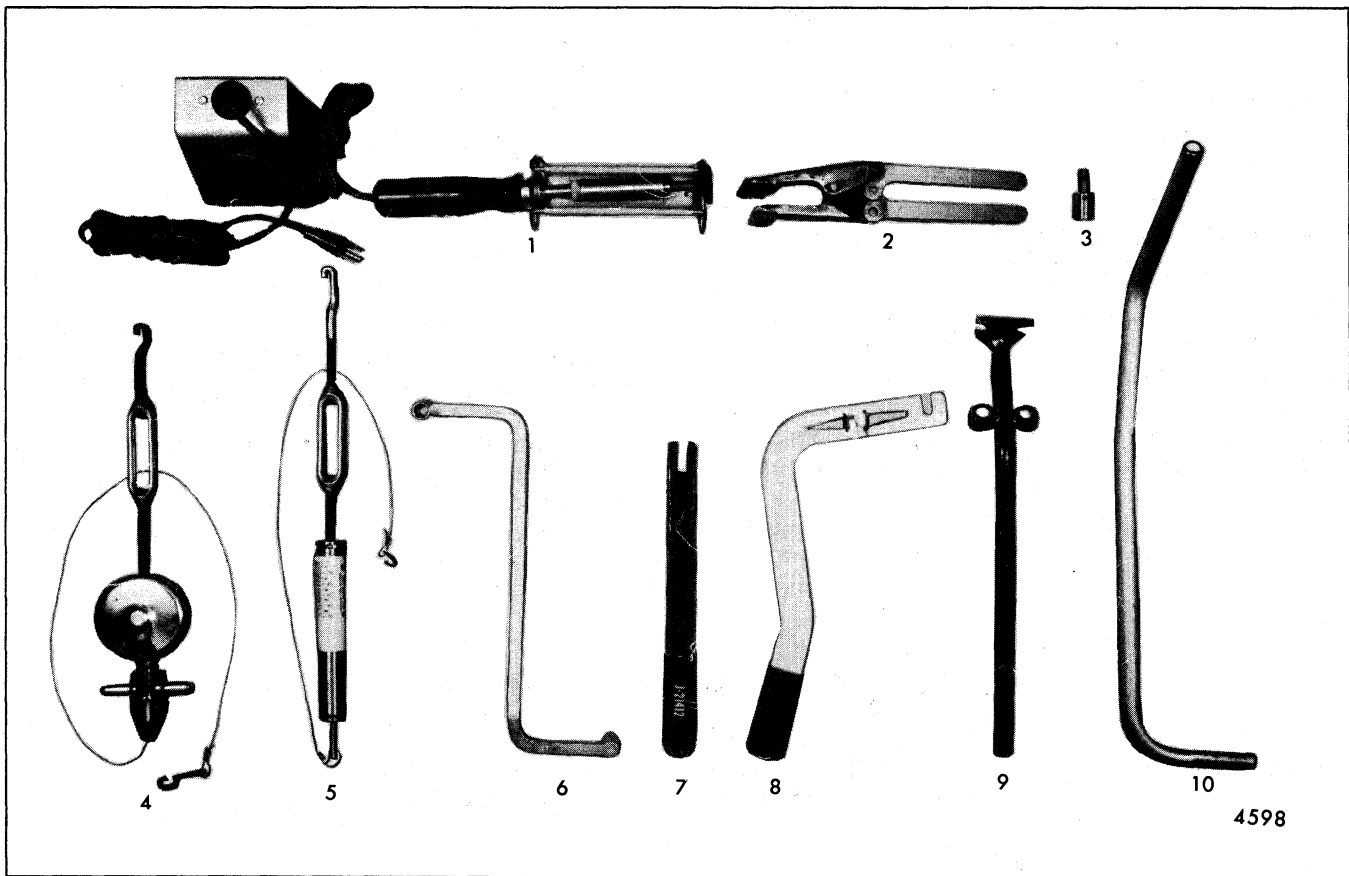


Fig. 1-12-Special Body Tools

1. J-23091 - Fabric Roof Cover Repair Tool - Chevrolet, Pontiac, Oldsmobile and Buick Styles
2. J-23497 - Door Hinge Spring Compressing Tool - "X" Styles
3. J-23302, J-23457 and BT-7107 - Seat Belt Anchor Bolt Removing Tool
4. BT-7111 - Folding Top Tension Checking Gauge - "B and E" Styles
5. J-23790 - Folding Top Tension Checking Gauge - "B and E" Styles
6. J-22810 - Door Hinge Wrench - "A, B, C, E and F" Styles
7. J-21412 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - "X" Styles
8. BT-7102 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - Oldsmobile "E" Styles
9. J-23722 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - Cadillac "C and E" and Buick "E" Styles
10. J-23719 - Retractable Tailgate Torque Rod Adjusting Tool - "B" Styles

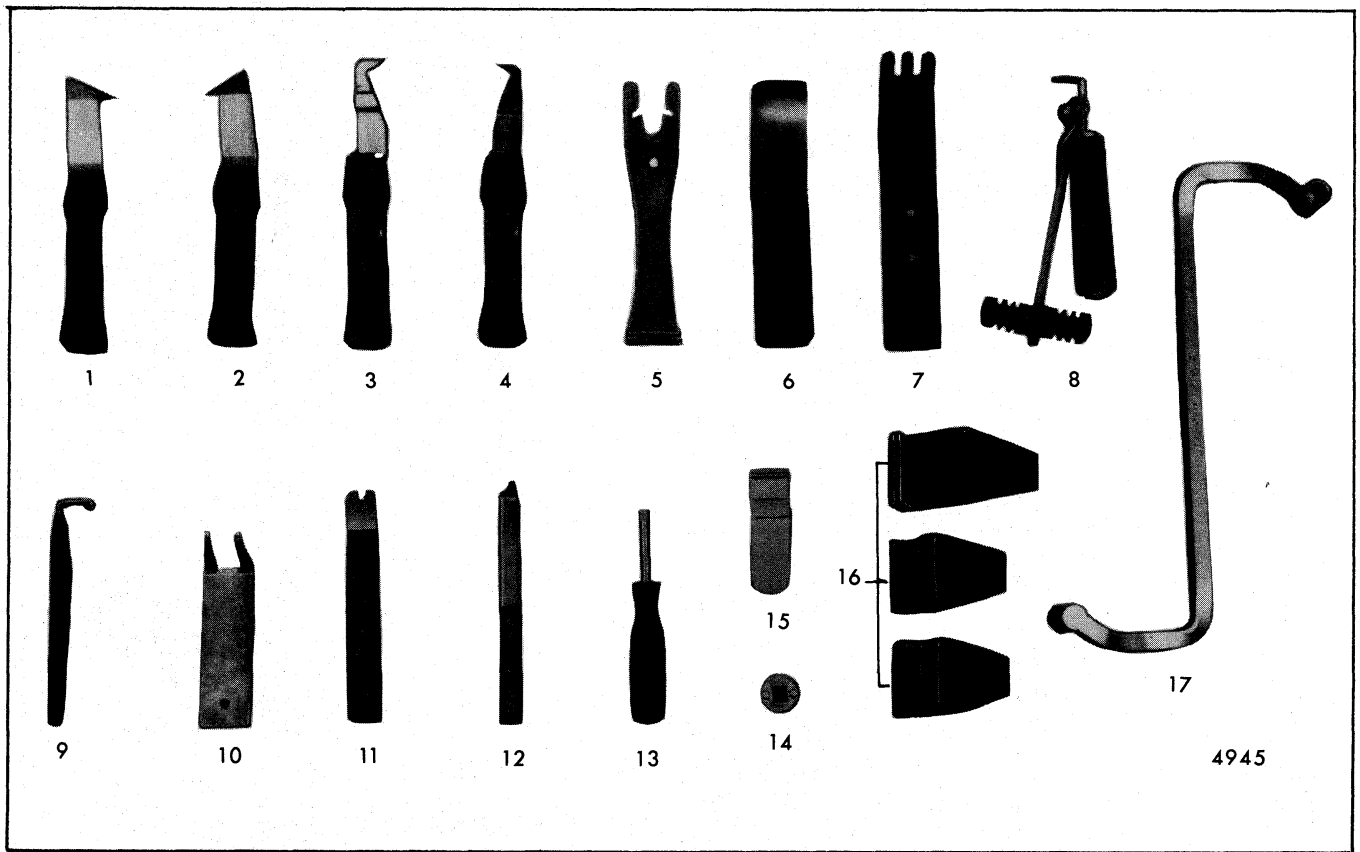


Fig. 1-13-Special Body Tools

- | | | |
|---|---|---|
| <p>1. J-21549-10 - Reveal Molding Remover - "B, C, D, E, F and H" Styles (Left Hand Operation)</p> <p>2. J-21549-11 - Reveal Molding Remover - "B, C, D, E, F and H" Styles (Right Hand Operation)</p> <p>3. J-21549-5 - Reveal Molding Remover (Left Hand Operations) - "A and X" Styles</p> <p>4. J-21549-6 - Reveal Molding Remover (Right Hand Operations) - "A and X" Styles</p> | <p>5. J-9886 - Door Handle Clip and Trim Pad Remover (Nail Retention) - All Styles</p> <p>6. J-2772 - Headlining Installer - All Styles</p> <p>7. J-24416 - Side Garnish Molding Remover - "A" Styles</p> <p>8. J-24402 - Stationary Glass Remover</p> <p>9. J-8966 - Windshield Wiper Arm Removing Tool - All Styles</p> <p>10. J-22128 - Windshield Wiper Arm Removing Tool - All Styles</p> <p>11. J-21104 - Weatherstrip Removing Tool - All Styles</p> | <p>12. J-21092 - Fabric Roof Cover Trim Knife - All Styles</p> <p>13. J-23554 - Door Trim Pad Applique Remover - All Styles</p> <p>14. J-22055 - Window Nut Remover - All Styles</p> <p>15. J-23711-5 - Glass Alignment Gauge Block - 6CB69 Style</p> <p>16. Glass Alignment Gauge Block Set: J-23394-"F" Styles; J-23711-"B, C and E" Styles; J-24792-1-"A" Styles</p> <p>17. J-24353 - Door Hinge Wrench - All Styles</p> |
|---|---|---|

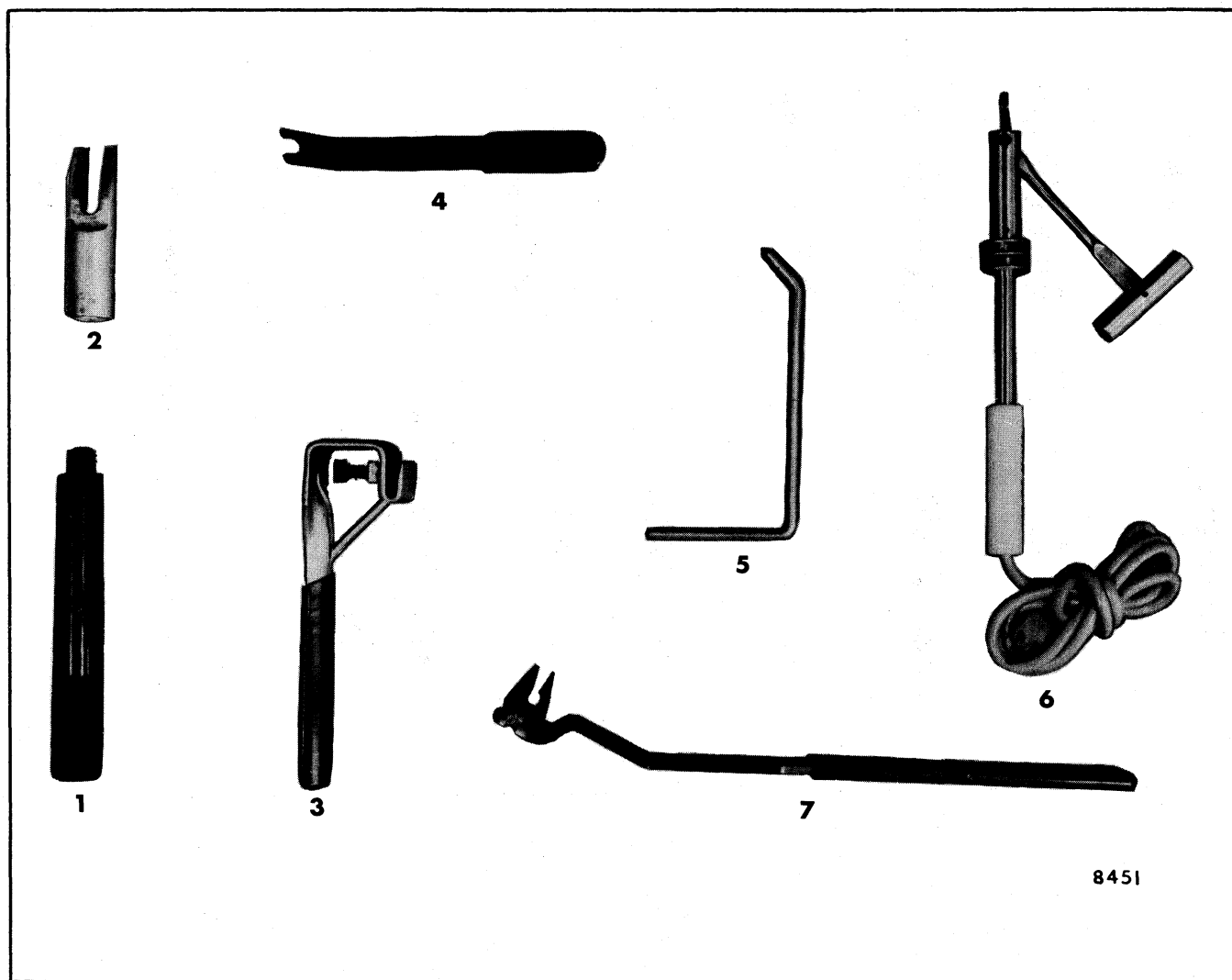


Fig. 1-14-Special Body Tools

1. J-8092 Handle - "H" Styles
2. J-23568 Door Hinge Pin Remover - "H" Styles
3. J-24854 Rear Compartment Lid Torque Rod Removal Tool - "H-11" Styles
4. J-24595 or BT-7323 Trim Pad Remover - All Styles
5. J-23581 Auxiliary Hood Release Tool - "H" Styles (Less "07" Styles)
6. J-24709-1 Stationary Glass Remover (750 Degree Hot Knife)
7. J-24877 Back Door Torque Rod Removal and Adjusting Tool - "H-15" Styles

SECTION 2

WINDSHIELD WIPER SYSTEM

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WINDSHIELD WIPER SYSTEM

DESCRIPTION

A two-speed wiper motor is standard equipment on all models.

The non-depressed park system uses a rectangular-shaped motor with wiper blades that are visible above the hood line when in the park position. A bottle mounted washer motor and pump assembly is used in conjunction with the rectangular motor on "F, H and X" styles. Refer to Washer Systems in this section for complete information.

The depressed park system uses a round motor and wiper blades that park below the hood line.

Both systems use a tandem wipe pattern, however the depressed park system incorporates an articulated arm and blade on the left hand (driver's) side.

CONTROL SWITCHES

For service information on dash mounted control switches, refer to Car Division Service Manuals.

PULSE CONTROL

An optional pulse system is available on all "X" styles. It consists of a separate dash mounted control that ranges from "off" to maximum delay and operates in conjunction with the regular dash switch, rectangular motor and jar mounted pump and motor assembly.

The pulse control is a variable timer which allows direct control of the amount of time delay between wipe strokes by varying the resistance in the feed circuit to the wiper motor. When the control is turned on, current is supplied to a capacitor. When the capacitor reaches a certain level of charge, it turns on a S.C.R. (Silicone Controlled Rectifier) which acts as an electrical switch to provide a path to ground for the wiper motor circuits and the motor begins to operate. As the motor output shaft and gear assembly rotates, the internal parking switch closes and shunts the S.C.R. (switch) circuit which turns the timer off. However, the motor continues to operate until the parking switch opens. When the switch opens, the motor stops in the park position and cur-

rent is again supplied to the variable timer which is the start of another pulse or delay sequence.

When the control is in the minimum delay position, the timer will recycle approximately every three seconds. In the maximum delay position, recycling occurs approximately every thirty seconds. The windshield wipers make one wipe cycle each time the timing circuit turns the wiper motor on.

Once the wipers are operating in "Hi" or "Lo" speed, the pulse mode is bypassed. Selecting a pulse mode at this time will not affect wiper operation.

Depressing the control switch to obtain washer pump operation causes the wipers to operate in "Lo" speed, overriding the pulse mode if previously activated. Moving the washer-wiper control switch to the "off" position will result in the wipers reverting to the pulse mode. To turn the wipers completely off, both the washer-wiper and pulse control switch must be in the "off" position.

The pulse control unit is serviced as a complete assembly.

DIAGNOSIS - PULSE CONTROL

CONDITION	APPARENT CAUSE	CORRECTION
1. Wipers inoperative in pulse mode but operate normally in "Hi" and "Lo" speed.	A. Open in red or black wire between dash switch and pulse control.	A. Repair as required and recheck wiper operation in pulse mode.
	B. Defective pulse control unit.	B. Replace pulse control unit.

TWO-SPEED RECTANGULAR MOTOR

DESCRIPTION

The system consists of a compound-wound, rectangular-shaped motor (Fig. 2-1) attached to a gearbox containing a parking switch in addition to the gear train. The gear train consists of a motor armature helical gear shaft which drives an intermediate gear and pinion assembly. The pinion gear of the intermediate gear and pinion drives an output gear and shaft assembly (Fig. 2-13). A rectangular motor application chart is shown in Figure 2-2.

Turning the wiper switch to the "LO" speed position completes the circuits from the wiper terminals 1 and 3 to ground. Current then flows from the battery through wiper terminal No. 2 through the series field and divides; (1) part passes through the armature to ground through wiper terminal No. 1 to the wiper switch and (2) part passes through the shunt field to ground through wiper terminal No. 3 to the wiper switch (Fig. 2-3).

NOTE: The wiper switch must be securely grounded to body metal.

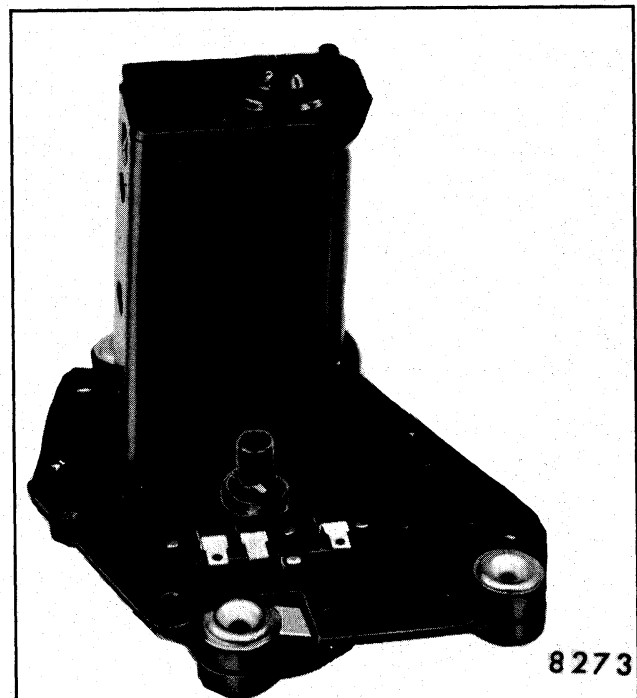


Fig. 2-1-Rectangular Motor

Moving the wiper switch to the "HI" speed position opens the shunt field circuit to ground at the switch. However, the shunt field is connected to a 20 ohm resistor which is connected across wiper terminals 1 and 3. The shunt field current then flows through terminal No. 3 through the resistor to terminal No. 1 to the switch, to ground (Fig. 2-4).

When the wiper blades are not in the normal "park" position, the parking switch contacts are still closed. The wiper will continue to operate until the wiper output gear is turned to a position where its cam opens the park switch. Referring to Figure 2-5, it can be seen that the wiper motor circuits are completed to ground through the park switch.

The shunt field circuit is completed from terminal No. 3 through the wiper switch to terminal No. 1 through the park switch to ground. The series field and armature circuit is also completed from terminal No. 1 through the park switch to ground.

When the output gear cam opens the park switch contacts, the wiper is "OFF".

1. Inspect for the following items:
 - a. Wiring harness is securely connected to wiper and switch.
 - b. Wiper motor is securely grounded to body.
 - c. Wiper switch is securely mounted and grounded.
 - d. Check fuse.
2. If items in step 1 check out, try operating wiper in both "LO" and "HI" speeds, then turn wiper off (blades should return to "park" position). If wiper fails to operate correctly, proceed to step 3.
3. Disconnect wiring harness from wiper and try operating wiper as shown in Figure 2-6.

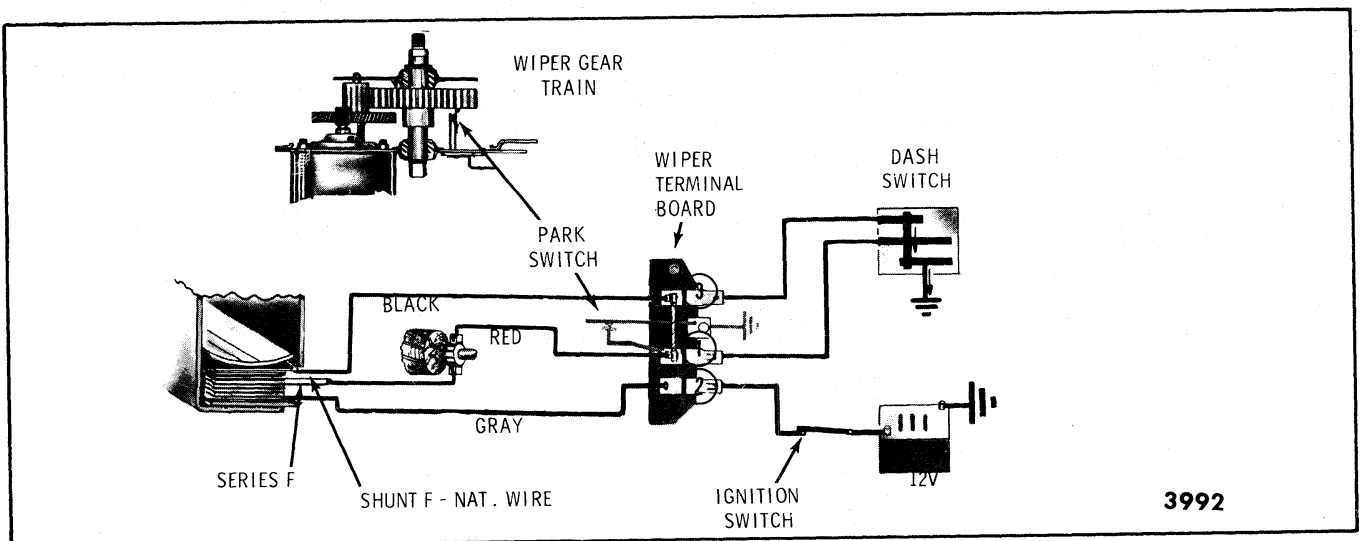


Fig. 2-3-"LO" Speed Circuit

- a. If wiper operates correctly independent of switch and car wiring, refer to the DIAGNOSIS CHART - WIPER ON CAR.
- b. If wiper still fails to operate correctly in step 3, disconnect wiper linkage from motor crank arm and try operating wiper again. If wiper operates correctly independent of link-

age, check linkage for cause of wiper malfunction.

- c. If wiper fails to operate correctly independent of linkage, remove wiper motor from car and refer to DIAGNOSIS CHART - WIPER OFF CAR.

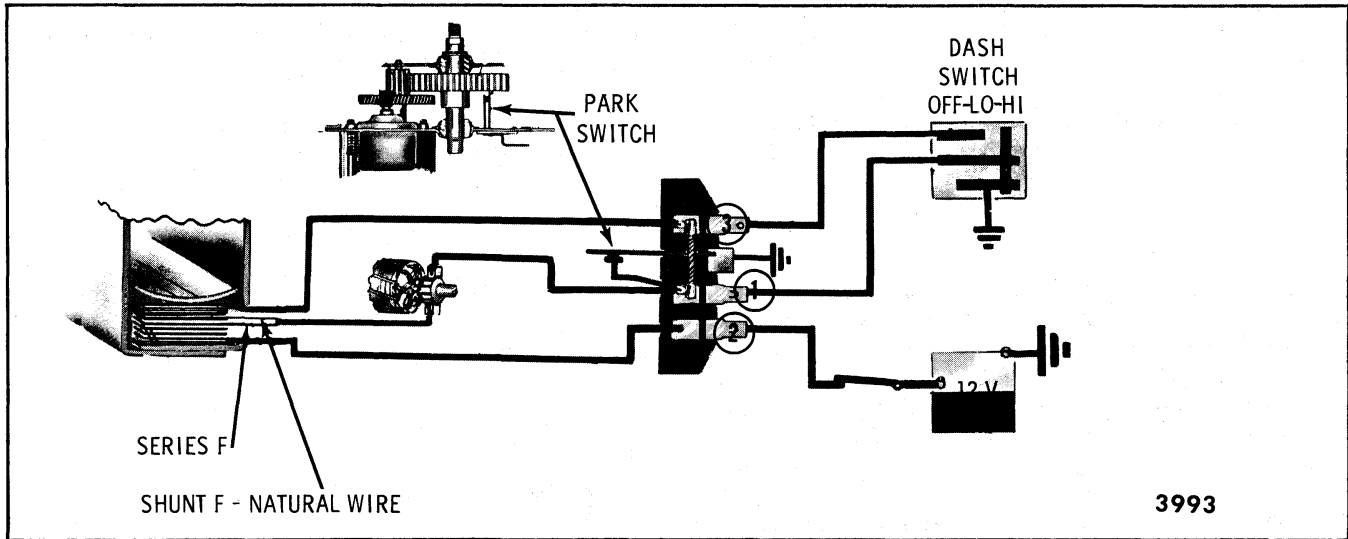


Fig. 2-4- "HI" Speed Circuit

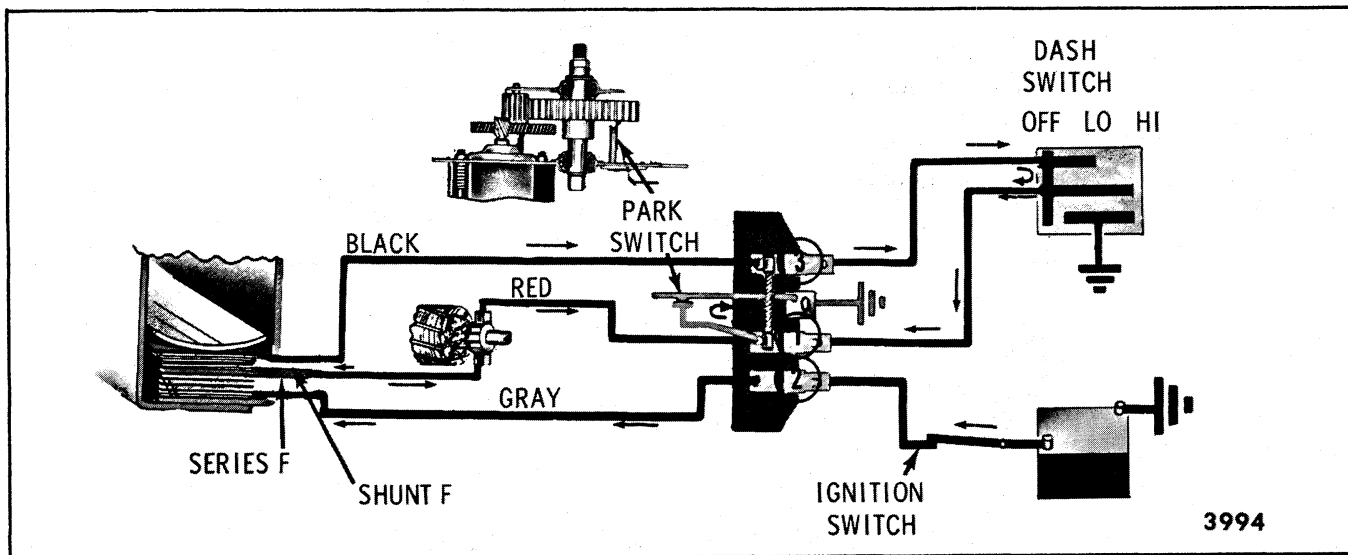


Fig. 2-5- Parking Circuit

DIAGNOSIS CHART - WIPER ON CAR - FIGURES 2-3, 2-4 AND 2-5

NOTE: Wiper operated correctly independent of car wiring and switch.

NOTE: Ignition switch must be "ON" for all electrical tests.

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper inoperative or intermittent	<p>A. Blown fuse</p> <p>B. Open circuit in feed wire (No. 2 terminal on wiper motor)</p> <p>C. Loose mounting of wiper switch</p> <p>D. Defective wiper switch</p> <p>E. Open circuit in wire to wiper switch (No. 1 terminal on wiper motor)</p>	<p>A. Locate short circuit and repair. Replace fuse.</p> <p>B. Locate broken wire and repair</p> <p>C. Tighten switch mounting</p> <p>D. Replace switch</p> <p>E. Locate broken wire and repair</p>
2. Wiper will not shut off: A. Wiper has both "LO" and "HI" speeds	A. Grounded Wire (No. 1 terminal on wiper motor) to wiper switch	A. Locate short circuit and repair
3. Wiper has "LO" speed only	<p>A. Defective wiper switch</p> <p>B. Grounded wire (No. 3 terminal on wiper motor) to wiper switch</p>	<p>A. Replace wiper switch</p> <p>B. Locate and repair short circuit</p>
4. Wiper has "HI" speed only	<p>A. Defective wiper switch</p> <p>B. Open circuit in wire (No. 3 terminal on wiper motor) to wiper switch</p>	<p>A. Replace wiper switch</p> <p>B. Locate and repair broken wire</p>
5. Blades do not return to full park position	A. Loose wiper ground strap connection	A. Tighten strap connection

DIAGNOSIS CHART - WIPER OFF CAR - FIGURES 2-6, 2-11 AND 2-12

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper inoperative or intermittent	<p>A. Broken or damaged gear train (only if inoperative)</p> <p>B. Poor solder connections at terminal board</p> <p>C. Loose splice joints at brush plate</p> <p>D. Brushes binding in brush holder</p> <p>E. Open circuit in armature</p>	<p>A. Replace gears as required</p> <p>B. Resolder wires at terminals</p> <p>C. Recrimp or solder splice joints</p> <p>D. Clean holder or replace brush, spring or brush plate assembly.</p> <p>E. Replace armature</p>
<p>2. Wiper will not shut-off:</p> <p>A. Wiper has normal "HI" and "LO" speed</p> <p>B. Wiper has "LO" speed only</p> <p>C. Wiper has "HI" speed only</p>	<p>A. Defective park switch</p> <p>B. Grounded red lead wire</p> <p>A. Grounded shunt field coil (Fig. 2-12)</p> <p>B. Grounded black wire</p> <p>A. Open circuit in shunt field coil (Fig. 2-12)</p> <p>B. Open circuit in black wire</p>	<p>A. Replace terminal board assembly</p> <p>B. Repair short circuit in red wire</p> <p>A. Replace frame and field assembly</p> <p>B. Repair short circuit in black wire</p> <p>A. Replace frame and field assembly</p> <p>B. Repair broken wire or poor solder connection</p>
3. Wiper shuts off - but not in park position	A. Park switch defective or contacts dirty	A. Replace terminal board assembly or clean contacts
4. "HI" speed too fast	A. Resistor defective	A. Replace terminal board assembly

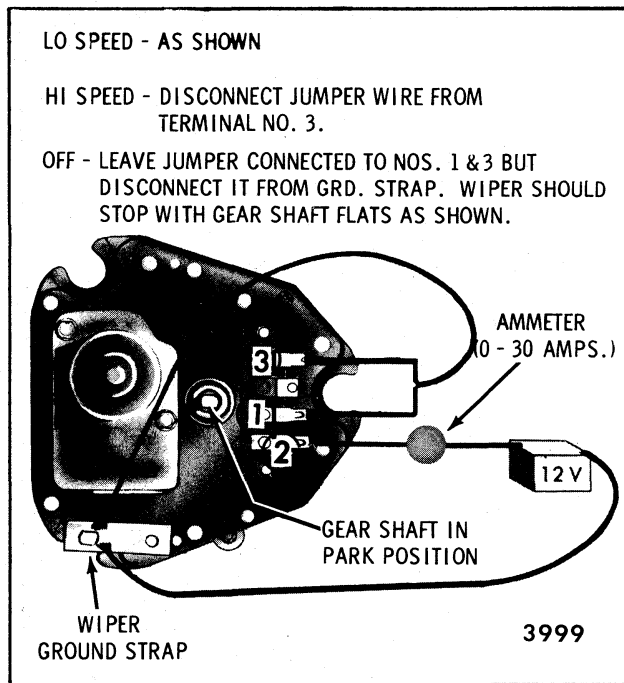


Fig. 2-6-Jumper Wire Connections

WIPER MOTOR

Removal and Installation

1. Raise hood and remove cowl screen or grille on "F and X" styles.
2. Disconnect wiring.
3. Reaching through cowl opening, loosen (do not remove) the transmission drive link attaching nuts to motor crank arm (Fig. 2-8).
4. Disconnect transmission drive link from motor crank arm.
5. Remove three motor attaching screws.
6. Remove motor while guiding crank arm through hole.
7. To install, reverse the removal procedure.

WIPER ARM

Removal and Installation

1. To remove the wiper arm and blade assemblies use tool J- 8966 or equivalent to minimize the possibility of windshield or paint finish damage during removal operation (Fig. 2-7).
2. To install the wiper arm and blade assemblies, with the wiper motor in the "park" position, install the wiper arm on the serrated transmis-

sion shaft in a position where the wiper blades will rest in the proper parked position. The same tool used for arm removal may be used to install the arm.

The parked position for "F" styles is indicated in Figure 2-8. On "X" styles, the tip of the left blade should rest 1.50" and the tip of the right blade 1.25" above top edge of windshield lower reveal molding. On "H" styles the tip of the left blade should rest approximately 2.00" and the tip of the right blade within 2.00" of top edge of lower windshield reveal molding. The outwiper dimension shown in Figure 2-8 is as follows:

- a. All "F" styles - .5" minimum to 2.25" maximum.
- b. "X" styles - 1.00".
- c. "H-07, 11, 15, 27" styles - 2.00" plus 0.66" or minus 1.00".
- d. "H-77" styles - 3.00" plus 0.66" or minus 1.00".

NOTE: The correct park position and outwiper dimension is determined with the wipers operating at "LO" speed on a wet glass.

Adjustment

The only adjustment of the wiper arm(s) is to remove the arm(s) from the serrated transmission shaft, rotate the arm(s) the required distance and direction and reinstall to transmission shaft. Wiper arm removal tool J-8966, or equivalent, may be used for arm removal and installation while making adjustments (Fig. 2- 7).

NOTE: Wiper motor must be in park position.

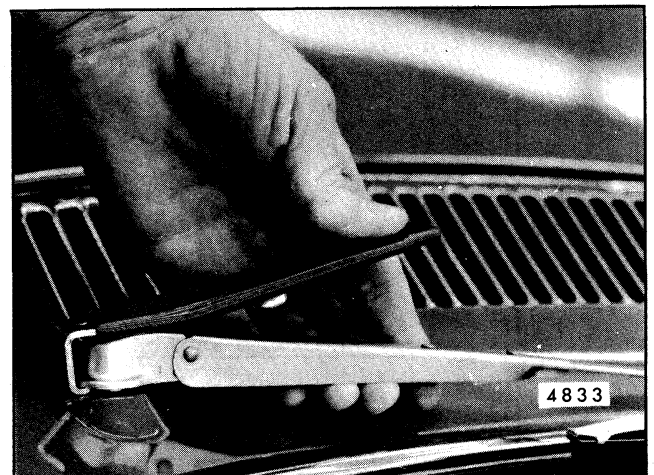


Fig. 2-7-Wiper Arm Removal Tool J-8966 (Or Equivalent)

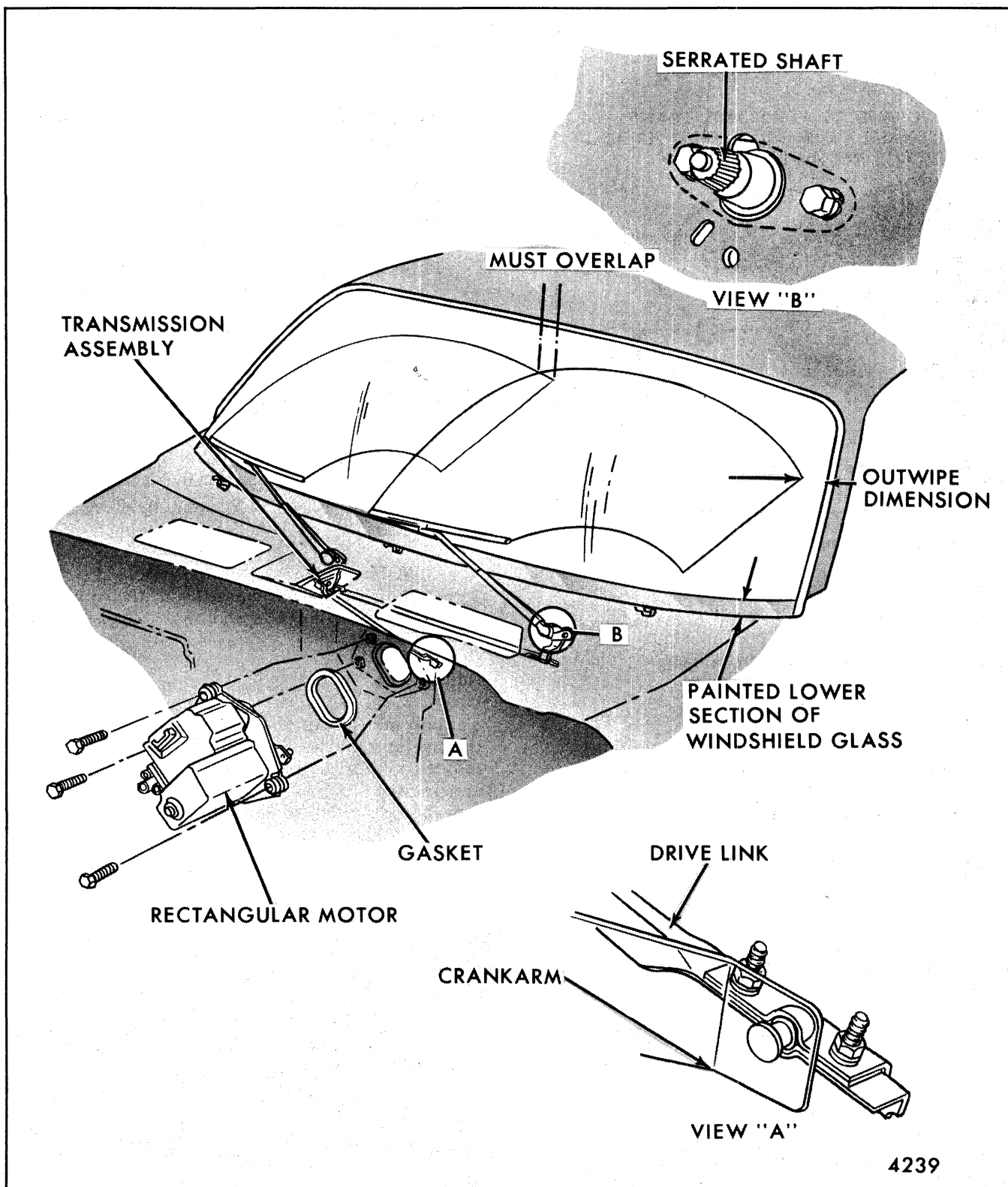


Fig. 2-8-Wiper Installation and Wipe Pattern - "F" Styles

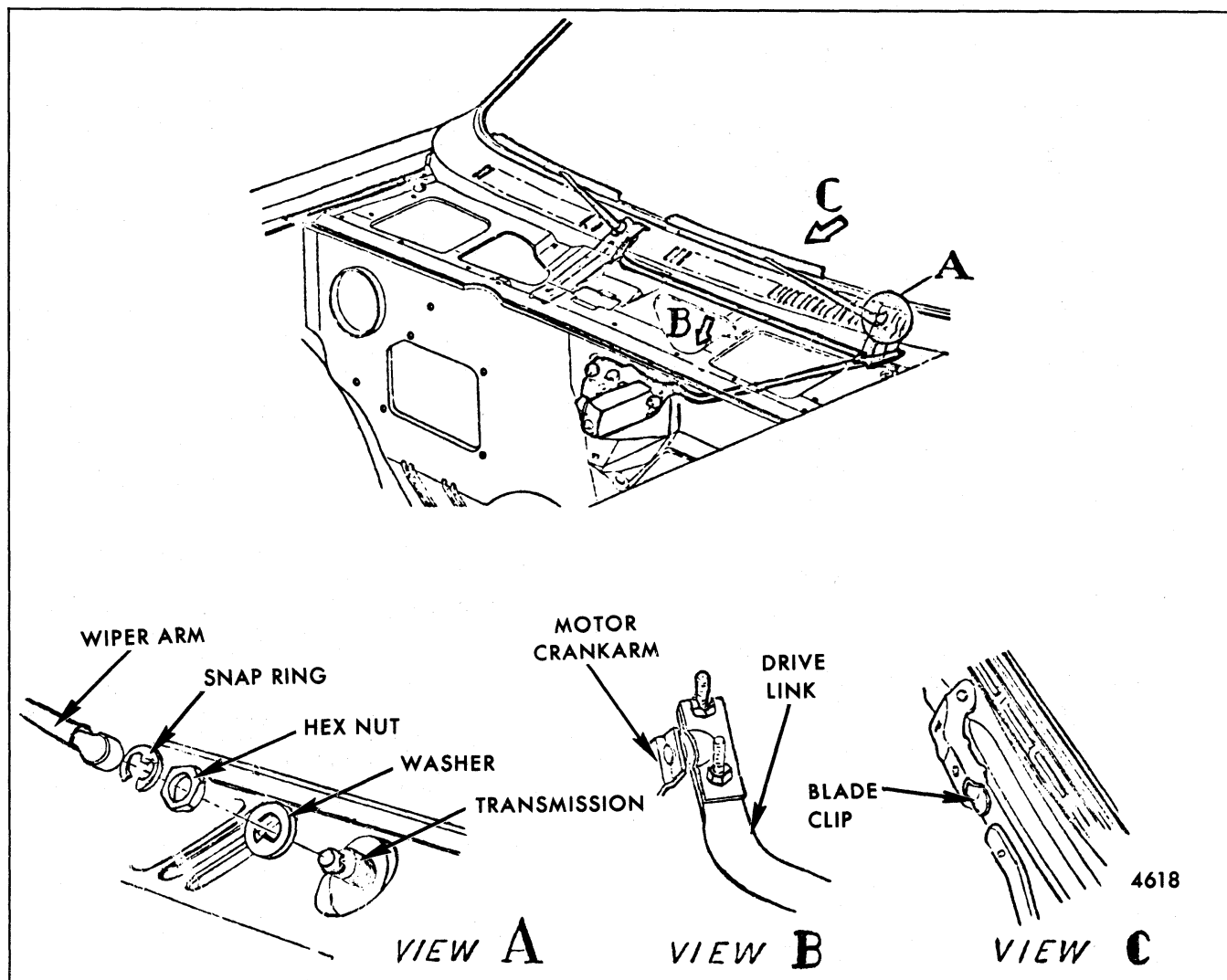


Fig. 2-9-Wiper Installation - "H" Styles

WIPER BLADE

Removal and Installation

Two methods are used to retain wiper blades to wiper arms on "F and X" styles. A third method is used to retain wiper blades on "H" styles.

One method for "F and X" styles uses a press-type release tab. When the release tab is depressed, the blade assembly can be separated from the arm (Fig. 2-10).

The other method for "F and X" styles uses a coil spring retainer. A screwdriver must be inserted on top of the spring and the spring pushed downward (Fig. 2-10). The blade assembly can then be separated from the arm.

To install the blade assembly to the arm on "F and X" styles, insert blade over pin at tip of arm and press until spring retainer engages groove in pin.

On "H" styles, to remove the wiper blade from the wiper arm depress the spring type blade clip (Fig. 2-9) away from the underside of the arm and slide arm out of blade clip.

To install wiper blade to wiper arm, slide tip end of arm into blade clip until pin on tip end of arm engages hole in clip.

Two methods are used to retain the blade element in the blade assembly (Fig. 2-10).

One method uses a press-type button. When the button is depressed, the blade assembly can be slid off the blade element.

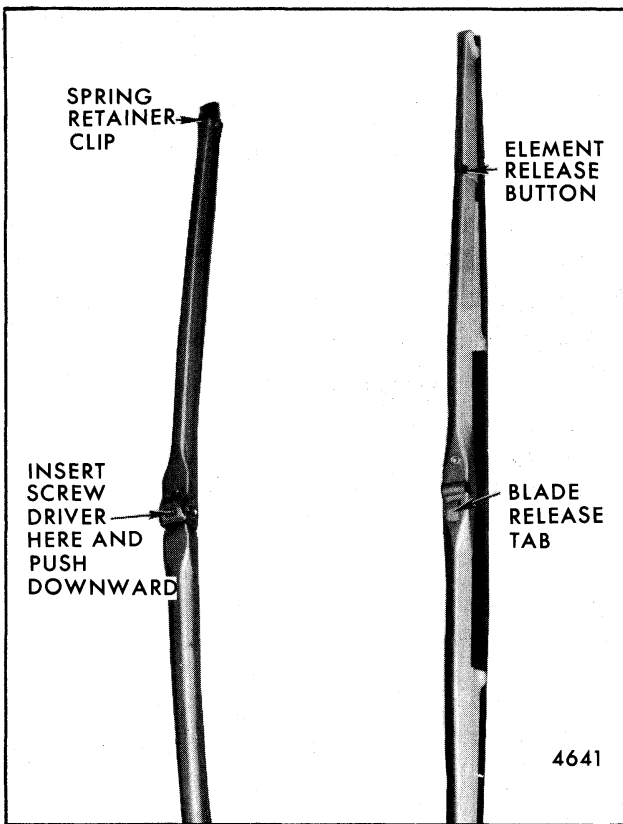


Fig. 2-10-Wiper Blade Assemblies

The other method uses a spring-type retainer clip in the end of the blade element. When the retainer clip is squeezed together, the blade element can be slid out of the blade assembly.

When installing a blade element into a blade assembly, be certain to engage the metal insert of the element into all retaining tabs of the blade assembly.

NOTE: When properly installed, the element release button or the spring type element retaining clip should be at the end of the wiper blade assembly nearest the wiper transmission.

WIPER TRANSMISSION

Removal and Installation

1. Remove wiper arms and blades as described under Wiper Arm Removal and Installation.
2. Raise hood and remove cowl vent screen or grille on "F and X" styles.
3. Disconnect wiring from wiper motor.
4. Loosen, do not remove, transmission drive link

to motor crank arm attaching nuts (Fig. 2-9) and disconnect drive link from motor crank arm.

5. On "F and X" styles, remove right and left transmission to body attaching screws and on "H" styles remove transmission snap ring, hex nut and washer and guide transmissions and linkage assembly out through cowl plenum chamber opening.
6. To install, on "F and X" styles, place transmissions and linkage assembly in plenum chamber and install transmission to body attaching screws loosely.
7. To install "H" style transmissions and linkage assemblies place the assembly in the plenum chamber with the transmission shaft extending through attaching opening.
 - a. Using a "Loctite/75 Adhesive Kit" or equivalent, spray both hex head nuts with primer supplied in the kit and allow primer to dry approximately five minutes.
 - b. Apply one drop of "Loctite/75" adhesive or equivalent to the threaded portion of one of the hex head nuts and install flat washer over transmission shaft. Hand start hex head nut two full threads to avoid cross threading and then tighten nut to a torque of 144 to 216 inch-pounds.
8. Connect transmission drive link to motor crank arm and tighten attaching nuts (25 to 35 inch-pounds torque).

NOTE: Nut must be tightened within three minutes after applying adhesive.

- c. Repeat step 7b. on the remaining transmission shaft.
- d. Install snap ring retainer on shaft of right and left transmission assemblies.

NOTE: Wiper motor must be in park position.

9. On "F and X" styles align transmission assemblies and tighten transmission to body attaching screws.
10. Connect wiring to wiper motor.
11. Install cowl vent screen or grille on "F and X" styles and close hood.
12. Install wiper arms and blades and check wiper operation, wipe pattern and park position of blades.

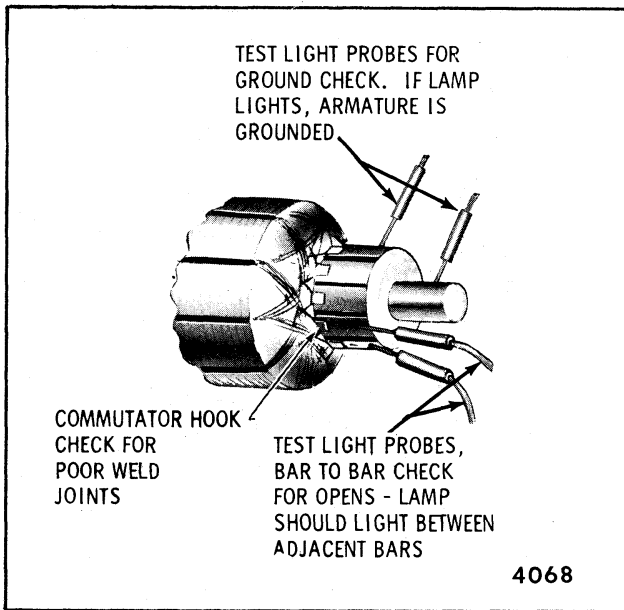


Fig. 2-11-Checking Armature

DISASSEMBLY-ASSEMBLY PROCEDURE

The disassembly-reassembly procedures for the wiper are broken down into two major areas: the motor section and gearbox section.

Gearbox Disassembly

1. Remove rubber cap from wiper gear shaft.
2. Clamp crank arm in a vise and remove crank arm retaining nut.

CAUTION: Failure to clamp crank arm may result in stripping of wiper gears.

3. Remove crank arm, seal cap, retaining ring and end play washers (Fig. 2-13).

CAUTION: Seal cap should be cleaned and repacked with a waterproof type grease before reassembly.

4. Drill out staking that secures gear box cover (Fig. 2-14). Use a 9/32" drill.

NOTE: Mark ground strap location and save ground strap for reassembly.

5. Remove output gear and shaft assembly, then slide intermediate gear and pinion assembly off shaft.
6. If required, remove terminal board and park switch assembly as follows:

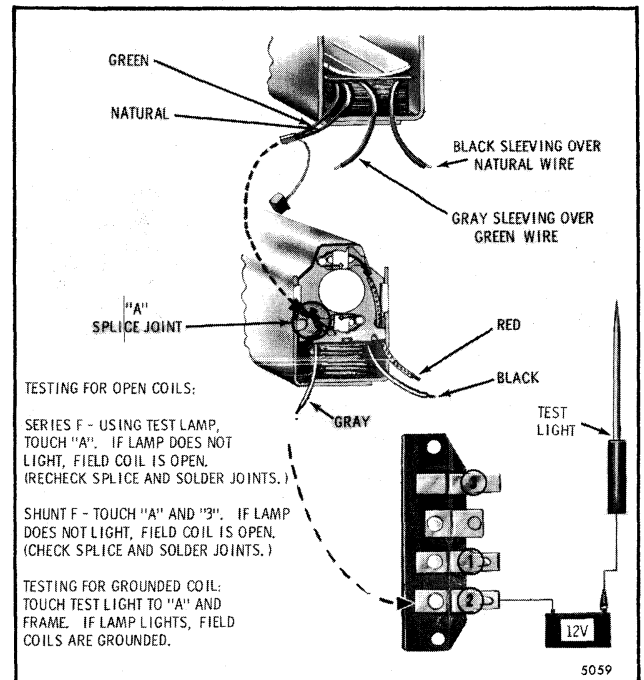


Fig. 2-12-Testing Field Coils

- a. Note position of motor leads on terminals, then unsolder.
- b. Drill out rivets that secure terminal board and park switch ground strap to plate. Use a 7/64" drill.

NOTE: Screws, nuts and washers for attaching a replacement terminal board park switch assembly are included with a replacement assembly.

Gearbox Reassembly

CAUTION: Lubricate all gear teeth with lubricant noted on Specifications Chart, Figure 2-19.

1. If park switch and terminal board assembly were removed, reinstall replacement assembly using the attaching screws and nuts included in the service package. Resolder leads to terminals (Fig. 2-15).
2. Install wave washer and intermediate gear on intermediate gear shaft.
3. Install output gear and shaft assembly with cam at least 90 degrees away from park switch (Fig. 2-16).
4. Assemble gearbox cover to wiper. Be careful to locate cover over locating dowels and intermediate gear shaft.

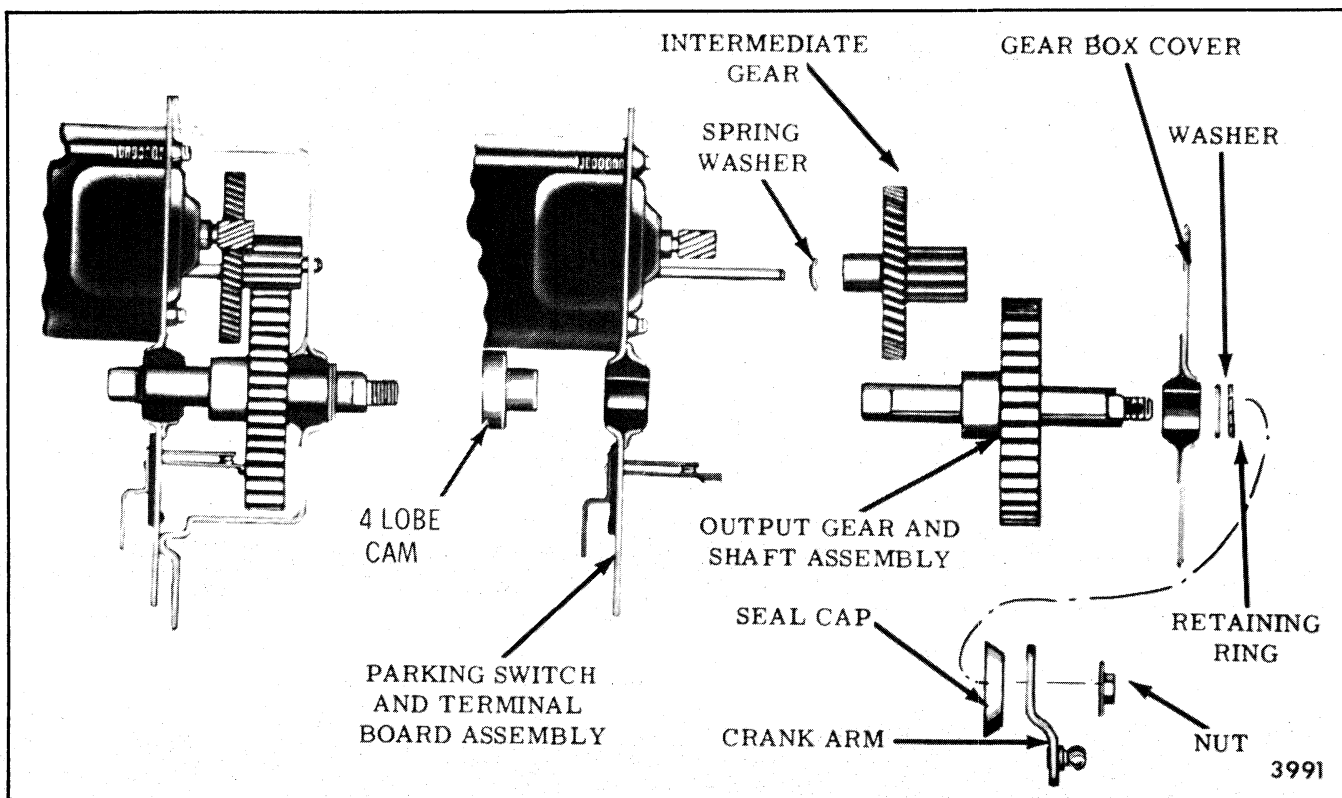


Fig. 2-13-Gearbox

- Secure cover to gear mounting plate over dowels. Be sure to reinstall ground strap.

NOTE: Screws, nuts and lock washers for reassembling cover to wiper are contained in a Service Repair Package.

- Reassemble end play washers and retaining ring over output gear shaft (Fig. 2-13). Use end play

washers as required to obtain .005" maximum end play.

- Install seal cap.

- To reassemble crank arm in proper position, operate wiper to park or "OFF" position (Fig. 2-6) and install crank arm so that index marks on crank arm line up with those on the gearbox cover (Fig. 2-14).

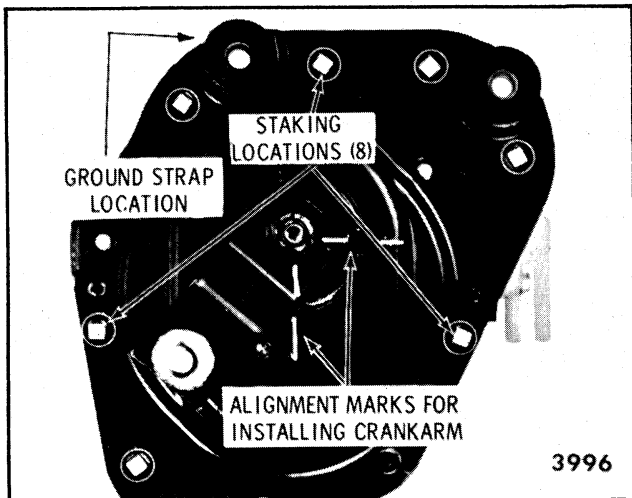


Fig. 2-14-Staking Locations

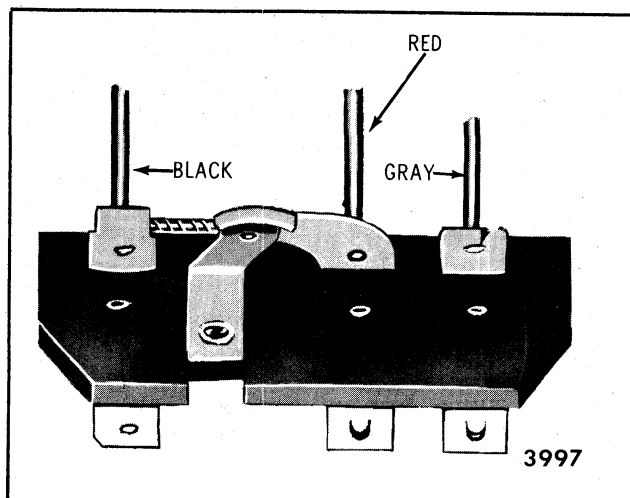


Fig. 2-15-Parking Switch and Terminal Board

CAUTION: Clamp crank arm in vise before securing the retaining nut.

9. Operate wiper (Fig. 2-6) and check performance per data in specification chart (Fig. 2-19).

Motor Disassembly

1. Disassemble gearbox as required to gain access to internal solder connections at wiper terminal board and unsolder motor leads from terminals.

NOTE: Step 1 necessary for frame and field replacement only.

2. Remove motor tie bolts (Fig. 2-17).
3. Hold end cap against frame and field and disengage complete motor section from gearbox.
4. Turn motor section as required to gain access to brush plate assembly and release brush spring pressure against brushes (Fig. 2-18).
5. Move brushes away from armature commutator and remove armature and end cap from frame and field assembly.

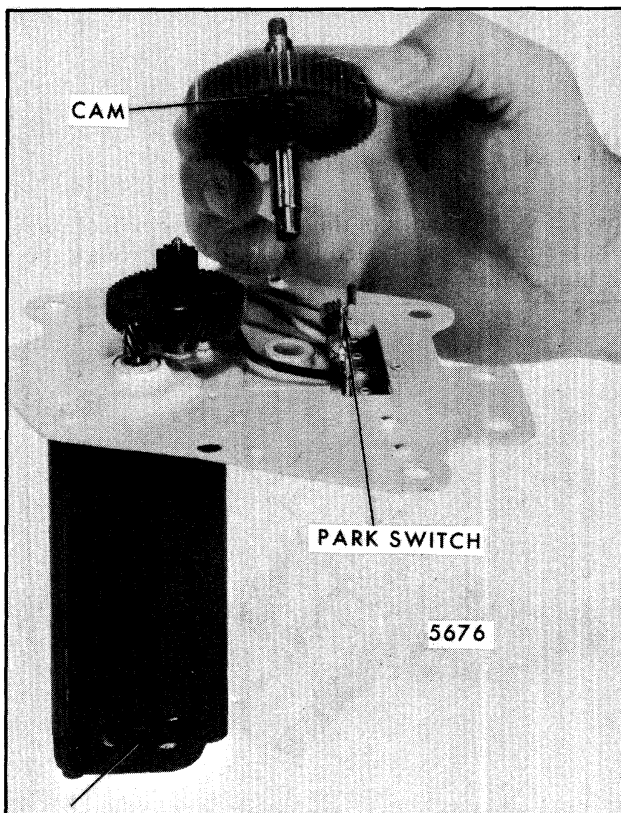


Fig. 2-16-Gear Installation

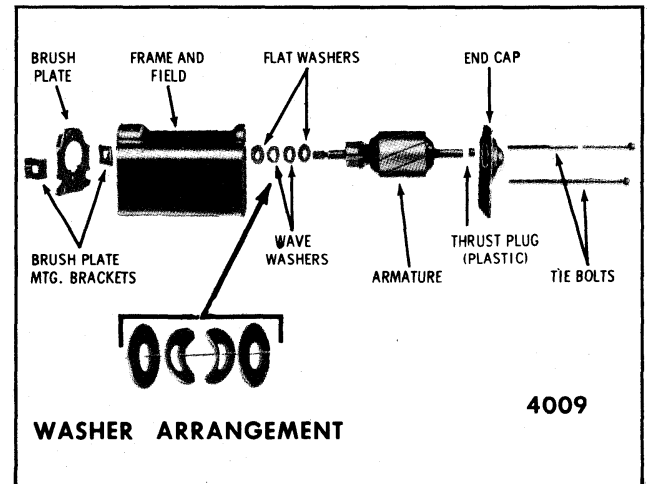


Fig. 2-17-Wiper Motor - Exploded View

6. Remove end cap from end of armature shaft.

CAUTION: Be careful not to lose the plastic thrust plug in end of armature.

7. Remove end play washers from commutator end of armature shaft. When reassembling armature in wiper, install washers as shown in Figure 2 17.
8. To replace brushes, cut brush pigtail approximately 1/4" from splicing clip. Splice the new brush pigtail to the 1/4" of pigtail left from the original brush.

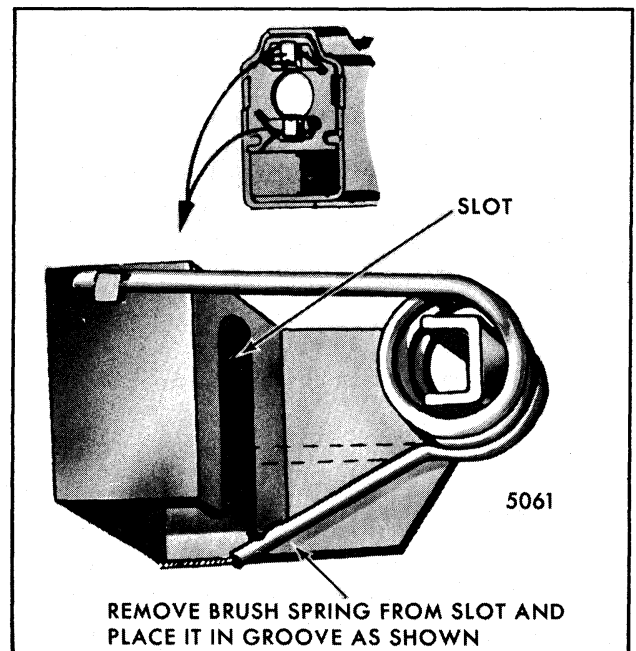


Fig. 2-18-Removing Brush Spring Tension

SPECIFICATION CHART			
Operating Voltage	12 Volts D.C.		
Current Draw (No Load)			
"Lo" Speed	4.0 AMPS MAX.		
"Hi" Speed	3.5 AMPS MAX.		
Stall (Cold Motor).	12.0 AMPS MAX.		
Crankarm Speed (RPM's)			
"Lo" Speed	31 Min.	12 V	
"Hi" Speed	55 Min.	12 V	
Torque	Inch Pounds		
Washer Pump Mounting Screws	18		
Motor Tie Bolts	30		
Motor Crankarm Attaching Nut.	100 - 130		
Motor Crankarm to Transmission Drive Link	25 - 35		
Motor to Body Attaching Bolts	30 - 45		
Transmission to Body Attaching Bolts.	48 - 72		
Transmission Hex Head Nut	144 - 216		
Lubrication			
Armature Shaft			
Bearings			
Gear Teeth			
Seal Cap (Inside)			
	Multifak EP-1 Or Equivalent	5366	

Fig. 2-19-Specification Chart - Rectangular Motor

TWO-SPEED ROUND MOTOR

DESCRIPTION

The round motor used on the "A, B, C, D and E" styles is approximately 4 1/2" in length (Fig. 2-20). The motor uses a drive gear with a gear ratio of 51:1.

The round motor used on "F" styles is approximately 4" in length (Fig. 2-20). The motor uses a drive gear with a gear ratio of 45:1.

A round motor application chart is shown in Figure 2-21.

In the round two speed motor the brush plate and circuit breaker assembly is attached to a field assembly that is staked into the end cap. The end cap and field assembly will be serviced as a unit (Fig. 2-39). The brush plate and circuit breaker must be detached from the field assembly in order to replace the armature. The motor has only two external leads.

NOTE: Splicing clips are provided in the replacement brush packages.

Motor Reassembly

Reverse disassembly steps 1 through 7 and reassemble gear. Lubricate the motor assembly as indicated in Specification Chart, Figure 2-19.

NOTE: Insure brush plate mounting brackets are properly seated into housing.

The 12 volt circuit to the center terminal of the switch and terminal board is completed through the ignition switch and fuse.

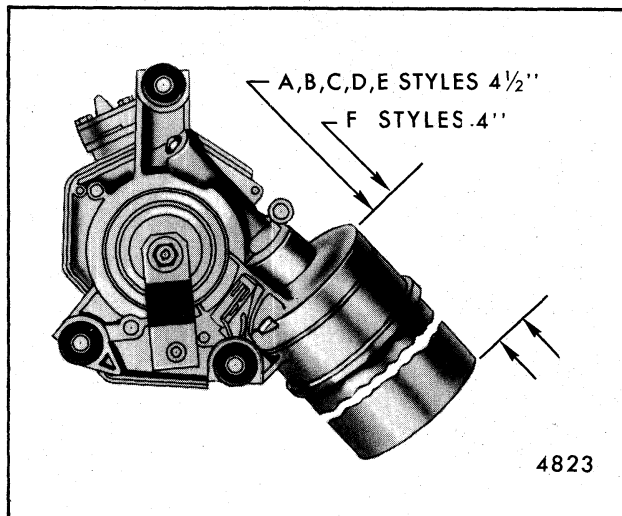


Fig. 2-20-Wiper Assembly

ROUND MOTOR APPLICATION				
CAR DIVISION	SERIES	MOTOR LENGTH	GEAR RATIO	CRANKARM LETTER
CHEVROLET PONTIAC OLDSMOBILE and BUICK	A	4½"	51:1	AG
CHEVROLET and PONTIAC	B F	4½" 4"	51:1 45:1	AL Y
OLDSMOBILE and BUICK	B-C-E	4½"	51:1	AL
CADILLAC	C-D-E	4½"	51:1	AL
				8402

Fig. 2-21-Round Motor Application Chart

Moving the wiper switch to the "LO" speed position (Fig. 2-22) completes the relay switch and terminal board coil circuit to ground at the wiper switch. With the coil energized, the relay switch contacts close completing the 12V circuit to the motor windings. Current then flows through the series field coil and divides, part passing through the shunt field coils to ground at the wiper switch, the other through the armature to ground through the internal circuit breaker.

Moving the wiper switch to the "HI" speed position (Fig. 2-23) maintains the relay switch and terminal board coil circuit to ground at the wiper switch, but opens the shunt field circuit to ground at the switch. The shunt field current then flows through the resistor located on relay switch and terminal board to ground. With a weakened shunt field, the motor runs faster.

Moving the wiper switch to the "MED" speed position (Cadillac only) connects a 13 ohm resistor, located in the switch, in parallel with the 20 ohm resistor from the shunt field circuit. These two resistors, connected in parallel, provide slightly less than 8 ohms resistance in the shunt field. The difference in resistance results in medium speed.

Turning the wiper switch off (Fig. 2-24) is the first step in shutting the wiper off. The wiper motor itself actually completes the shutting off operation. When the wiper switch is moved to the "OFF" position, two functions are accomplished:

1. The relay switch coil circuit is opened and this allows the spring-loaded latch arm to move out into the path of the gear drive pawl. The relay switch contacts, however, are still closed at this

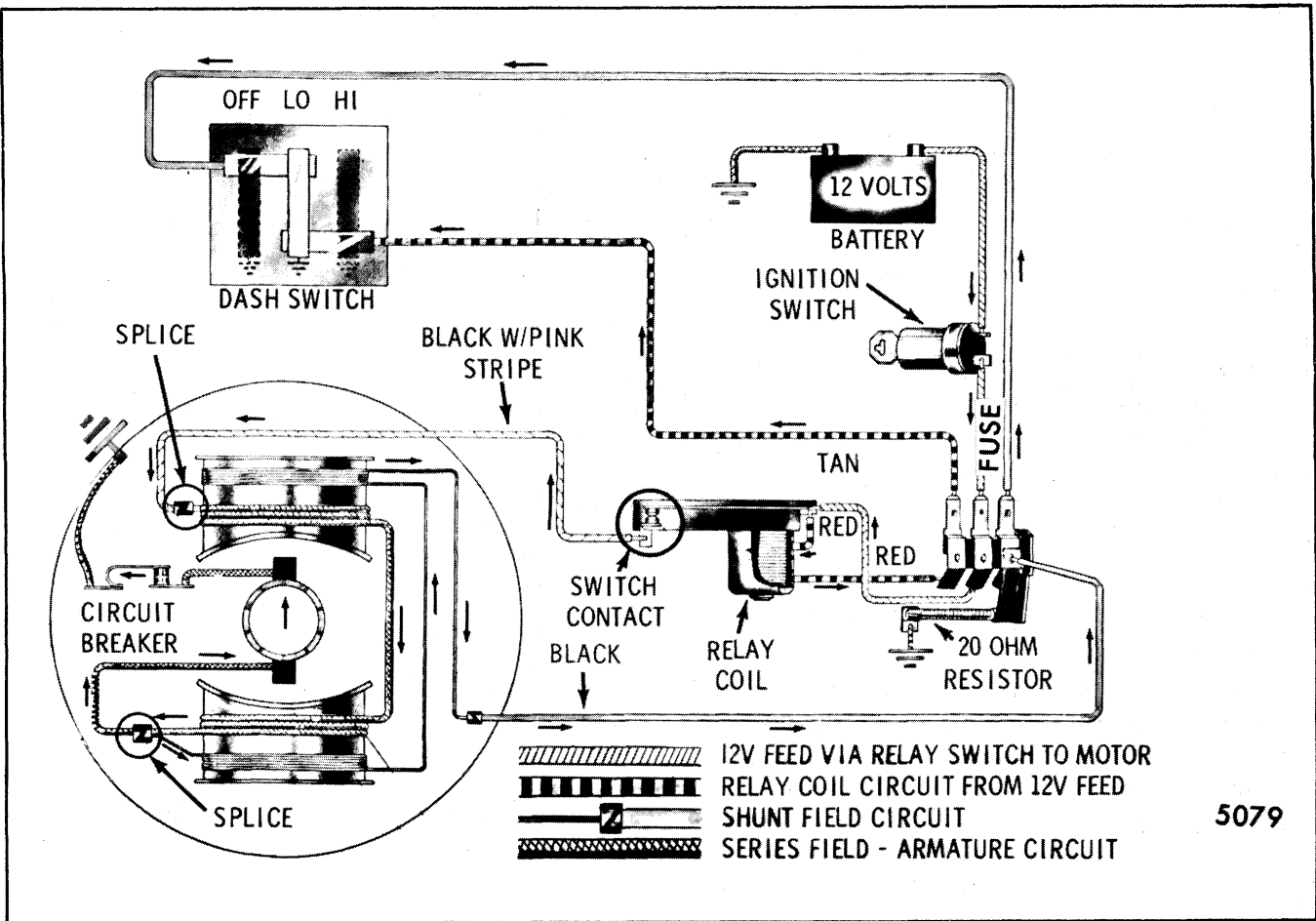


Fig. 2-22-"LO" Speed Circuit

stage of operation and the wiper motor continues to run (Fig. 2-25).

2. The shunt field circuit is connected to ground at the switch and the wiper operates in "LO" speed during this stage.

The wiper gear mechanism completes shutting off the wiper as follows:

Since the wiper motor continues to run when the switch is first turned off, the continuing rotation of the gear causes the drive pawl to engage the latch arm (Fig. 2-26). This action unlocks the gear from the drive pawl, lock pawl and the drive plate and output shaft assembly. With the drive plate and output shaft unlocked from the gear, and since the output shaft extends through the gear shaft off center, the continuing rotation of the gear at this point causes a cam action between the output shaft and the gear shaft. This cam action causes the gear drive pawl to move into the relay switch slot. As the drive pawl moves into the switch slot, it pushes the latch arm against the relay switch contact. This action

opens the relay switch contacts which cuts the 12V feed to the motor windings (Fig. 2-27).

DIAGNOSIS - WIPER ON CAR

1. Make a preliminary check of the following items:
 - a. Body wiring properly connected to relay switch and terminal board and wiper switch.
 - b. Wiper motor to dash mounting screws tight.
 - c. Wiper switch securely mounted.
 - d. Fuse.
 - e. With ignition switch turned "ON", there is a 12-volt supply at center terminal of relay switch and terminal board.
2. When checking wiper operation, operate wiper

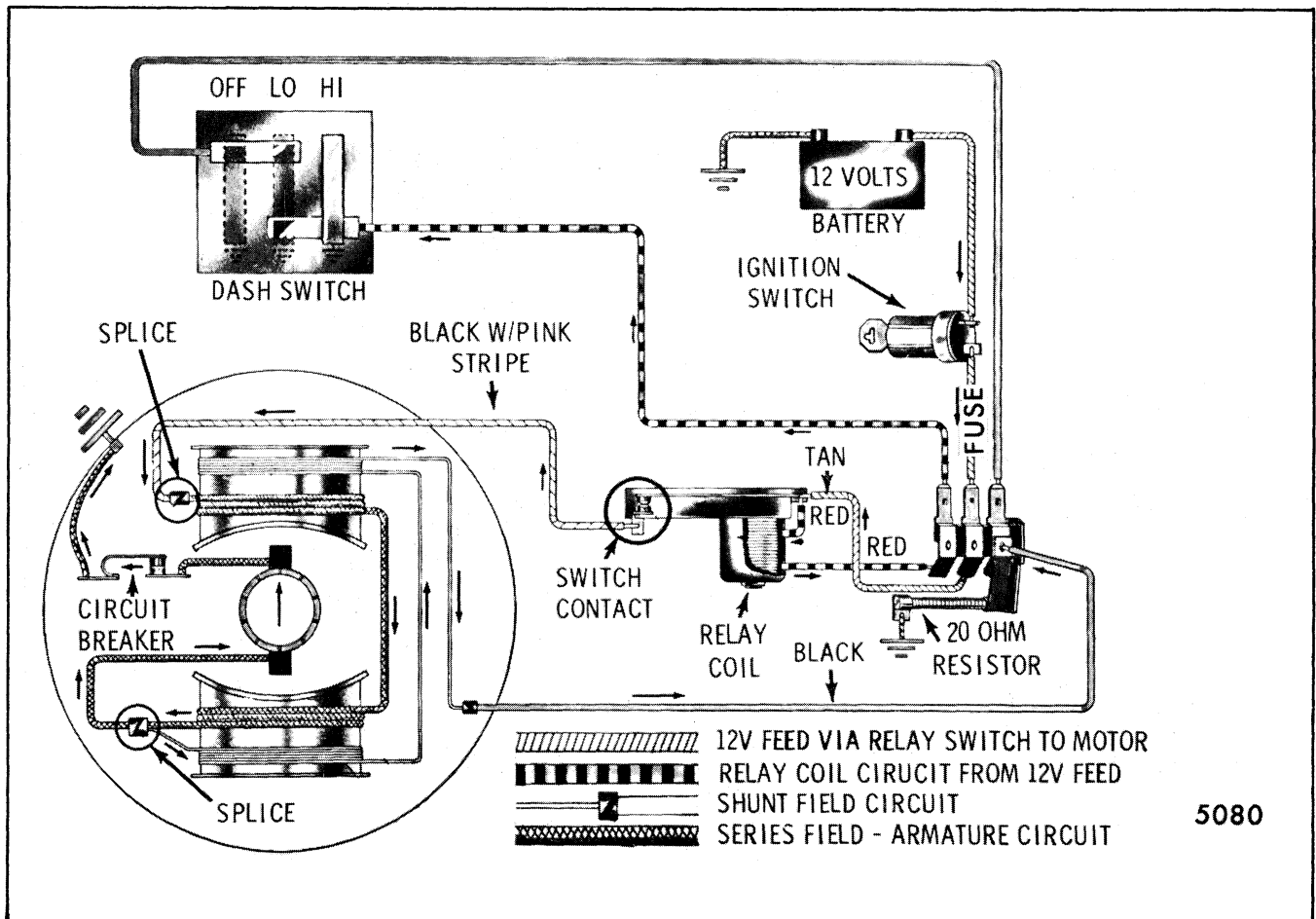


Fig. 2-23-"HI" Speed Circuit

independently of the car wiring or wiper switch as shown in Figure 2-31. Check wiper operation in "OFF", "LO" and "HI" positions.

- a. If wiper operates correctly, see **DIAGNOSIS CHART-WIPER ON CAR.**
- b. If wiper still fails to operate correctly, disconnect wiper linkage from wiper motor and re-

check for proper wiper motor operation.

1. If wiper motor operates correctly, check linkage for severe binding condition or breakage.
2. If wiper fails to operate correctly, remove wiper motor from car and check **DIAGNOSIS CHART - WIPER OFF CAR.**

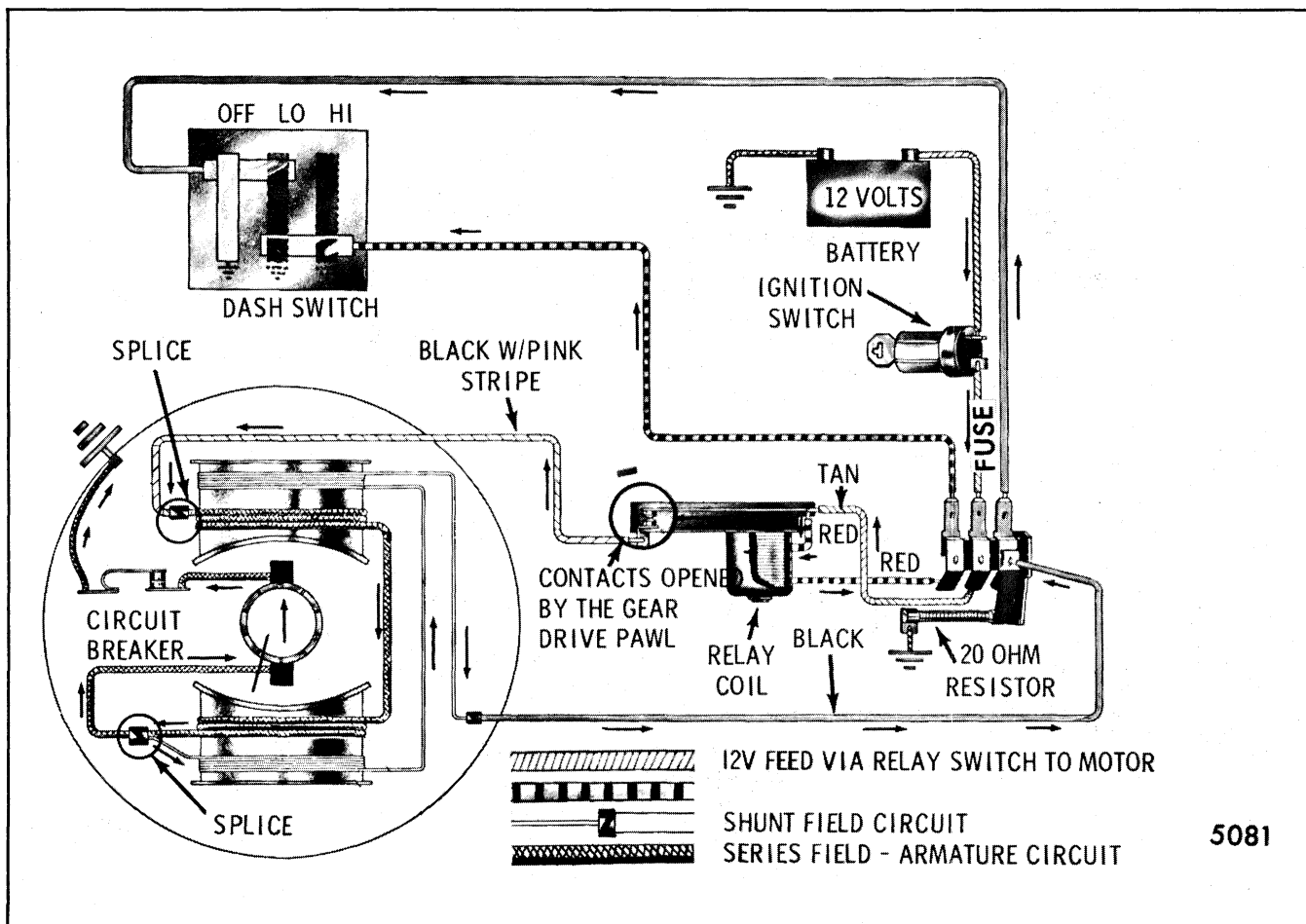


Fig. 2-24-Parking Circuit



Fig. 2-25-Gear in Normal Run Position

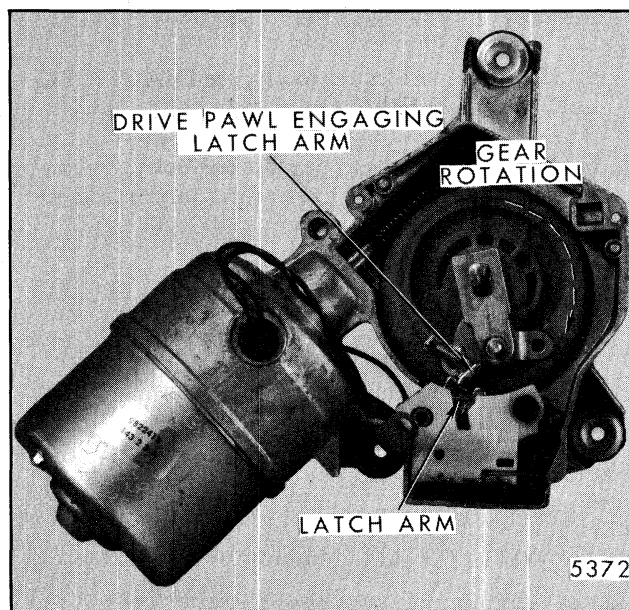


Fig. 2-26-Wiper Shutting "OFF"

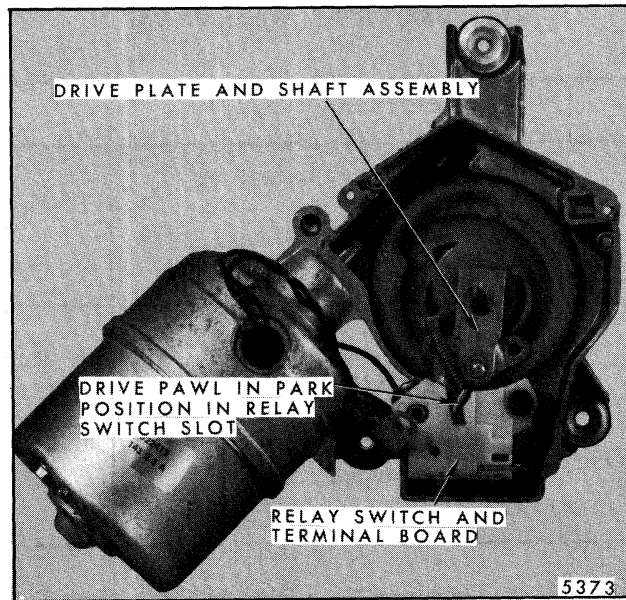


Fig. 2-27-Wiper Shut "OFF" in Park Position

DIAGNOSIS CHART - WIPER ON CAR

NOTE: Ignition switch must be "ON" for all electrical tests.

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper inoperative or intermittent	<p>A. Open lead wire from wiper terminal No. 1 to wiper switch.</p> <p>B. Wiper switch not securely mounted.</p> <p>C. Wiper switch defective.</p>	<p>A. Repair broken wire.</p> <p>B. Tighten switch mounting.</p> <p>C. Replace wiper switch.</p>
2. Will not shut off (Blades make full wipe stroke)	<p>A. Grounded lead wire from wiper terminal No. 1 to wiper switch.</p> <p>B. Corroded wiper terminals.</p> <p>C. Defective wiper switch.</p>	<p>A. Tape uninsulated portion of wire.</p> <p>B. Clean terminals.</p> <p>C. Replace wiper switch.</p>
3. Will not shut off (Blades move up and down about 15 degrees from park position.)	<p>A. Open in lead wire from wiper terminal No. 3 to wiper switch.</p>	<p>A. Repair broken wire.</p>

DIAGNOSIS CHART - WIPER ON CAR

CONDITION	APPARENT CAUSE	CORRECTION
3. Will not shut off etc. (Cont'd.)	B. Wiper switch mounting loose. C. Wiper switch defective.	B. Tighten switch mounting. C. Replace wiper switch.
4. "HI" speed only.	A. Open lead wire from wiper terminal No. 3 to wiper switch. B. Wiper switch defective.	A. Repair broken wire. B. Replace wiper switch.
5. "LO" speed only	A. Grounded lead from wiper terminal No. 3 to wiper switch. B. Defective wiper switch.	A. Tape uninsulated portion of wire. B. Replace wiper switch.
6. "HI" speed in "MED" position (Cadillac only)	A. Open medium speed resistor.	A. Replace wiper switch.

DIAGNOSIS CHART - WIPER OFF CAR

NOTE: Before using chart, try operating wiper as shown in Figure 2- 31. Check if wiper has "LO" and "HI" speeds and shuts off correctly. Match the trou-

ble found with the trouble shown in the chart. Use checking procedure following this chart by letter as indicated to locate cause of trouble.

CONDITION	APPARENT CAUSE	CHECKING PROCEDURE
1. Wiper inoperative (motor doesn't run)	1. Open relay switch coil 2. Circuit breaker open 3. Open armature 4. Motor series field open 5. Brushes sticking 6. Defective solder joints-relay switch 7. Binding condition-relay switch latch arm	Procedure A

DIAGNOSIS CHART - WIPER OFF CAR

CONDITION	APPARENT CAUSE	CORRECTION
2. Wiper will not shut off (Crank arm rotates through 360 degrees)	1. Relay switch coil grounded 2. Relay switch latch arm spring disconnected or broken 3. Latch arm binding	Procedure B
3. Wiper will not shut off (Crank arm moves back and forth in a horizontal plane accompanied by a loud "knock")	1. Relay switch contacts shorting together 2. Drive pawl spring disconnected 3. Wiper has one speed, "HI", caused by open shunt field	Procedure C
4. Wiper has one speed, "HI"	1. Shunt field open 2. Defective soldering at terminal No. 3 on relay switch and terminal board	Procedure C
5. Wiper has one speed, "LO"	1. Shunt field internally grounded 2. Shunt field lead to relay switch and terminal board (black) grounded 3. Shorted armature	Procedure D
6. Wiper has excessive speed in "HI"; "LO" speed normal	1. Open speed resistor 2. Poor resistor ground connection	Procedure E
7. Wiper stops at random (Crank arm stops rotating immediately and does not return to full park position.)	1. Relay switch contacts dirty or broken	Clean or replace relay switch and terminal board assembly as required

DIAGNOSIS CHART - WIPER OFF CAR

CONDITION	APPARENT CAUSE	CORRECTION
8. Intermittent operation	1. Defective circuit breaker (weak) 2. Circuit breaker tripping because of shorted armature and/or fields causing motor to draw excessive current	Procedure F
9. No apparent trouble on bench test but fails occasionally on car.	1. Armature end play tight 2. Gear assembly end play tight. 3. Loose solder or weld joints	See Wiper Motor Adjustments

PROCEDURE "A" (WIPER INOPERATIVE)

1. Remove washer pump to gain access to relay switch and terminal board assembly.
2. Connect 12-volt source to wiper, feed side to center terminal, ground side to gear housing (Fig. 2-31). Do not connect jumper to terminal 1 and 3.
3. To determine if relay switch coil is open, connect test lamp to wiper terminal No. 1. Test lamp should light.

4. Test relay switch as follows:

- a. If gear mechanism is in full park position, insert a small screwdriver into the switch slot (between the drive pawl and the latch arm) and push latch arm downward and toward the relay switch coil in direction of the arrow in Figure 2-28. Next, remove a small amount of insulation from black lead with pink tracer and touch test lamp to exposed wire.
- b. If test lamp lights but motor does not run, proceed to step 5.

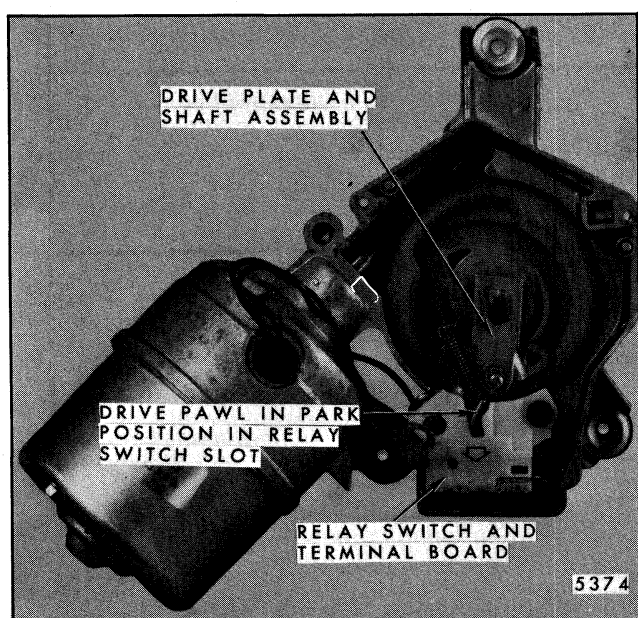


Fig. 2-28-Testing Relay Switch

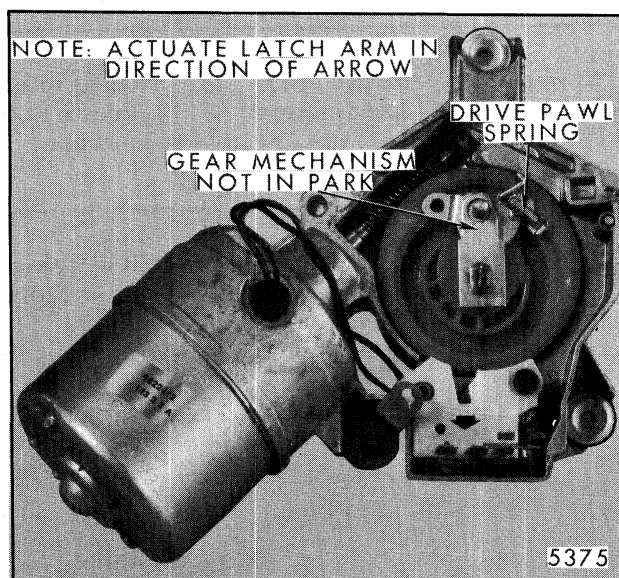


Fig. 2-29-Latch Mechanism

- c. If test lamp doesn't light, relay switch and terminal board is defective.

NOTE: Cover exposed wire with tape after the test.

5. Disassemble motor section and check the following:
 - a. Hung brush.
 - b. Solder connections at brush holders.
 - c. Splice joints at field coil connections to leads.
 - d. Open armature.
 - e. Circuit breaker ground connection on field lamination.
 - f. Visually inspect the circuit breaker for dirty or burned contacts or solder connections to circuit breaker terminals (Fig. 2-30).

PROCEDURE "B" (WIPER WILL NOT SHUT OFF - CRANK ARM ROTATES 360 DEGREES)

1. Observe if latch arm spring is connected properly.

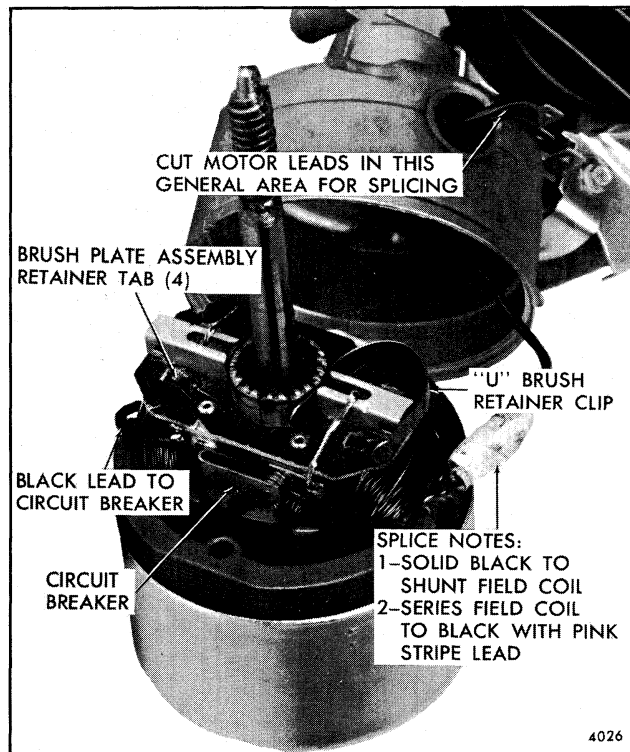


Fig. 2-30-Brush Plate Assembly

2. Manually operate latch arm to check it for possible binding condition.
3. If items 1 and 2 check out, connect power source to wiper and connect jumper wire from terminal No. 3 to wiper housing. **DO NOT** make any connections from terminal No. 1. Wiper motor should start to run as soon as connections are made. If this happens and wiper motor continues to run, the coil is internally grounded and the relay switch and terminal board assembly should be replaced.

PROCEDURE "C" (WIPER WILL NOT SHUT OFF - RECYCLES)

NOTE: Crank arm oscillates in a somewhat horizontal plane and is accompanied by a loud "knock" with each revolution of the gear.

1. Check that drive pawl and latch arm springs are properly connected (Fig. 2-29).
2. Check wiper for "LO" speed operation (Fig. 2-31). If wiper has "HI" speed only, check the following items:
 - a. Solder joint at No. 3 wiper terminal.
 - b. Splice joint - field coil crossover splice (Fig. 2-39).
 - c. Splice joint - black lead to field coil.
3. Check relay switch and terminal board as follows:
 - a. Remove small amount of insulation from black lead with pink stripe and connect test light between exposed wire and wiper housing.
 - b. Connect positive side of power source to terminal No. 2 and negative side to motor case. Install jumper wire from terminal No. 1 to motor case. Observe if test light goes out once for each revolution of gear or if light glows steadily. If light glows steadily, relay switch contacts are not opening and switch is defective. If light goes out each time drive pawl moves into relay switch slot, switch is functioning correctly.

PROCEDURE "D" (WIPER HAS ONE SPEED, "LO")

1. Check for grounded condition in the internal

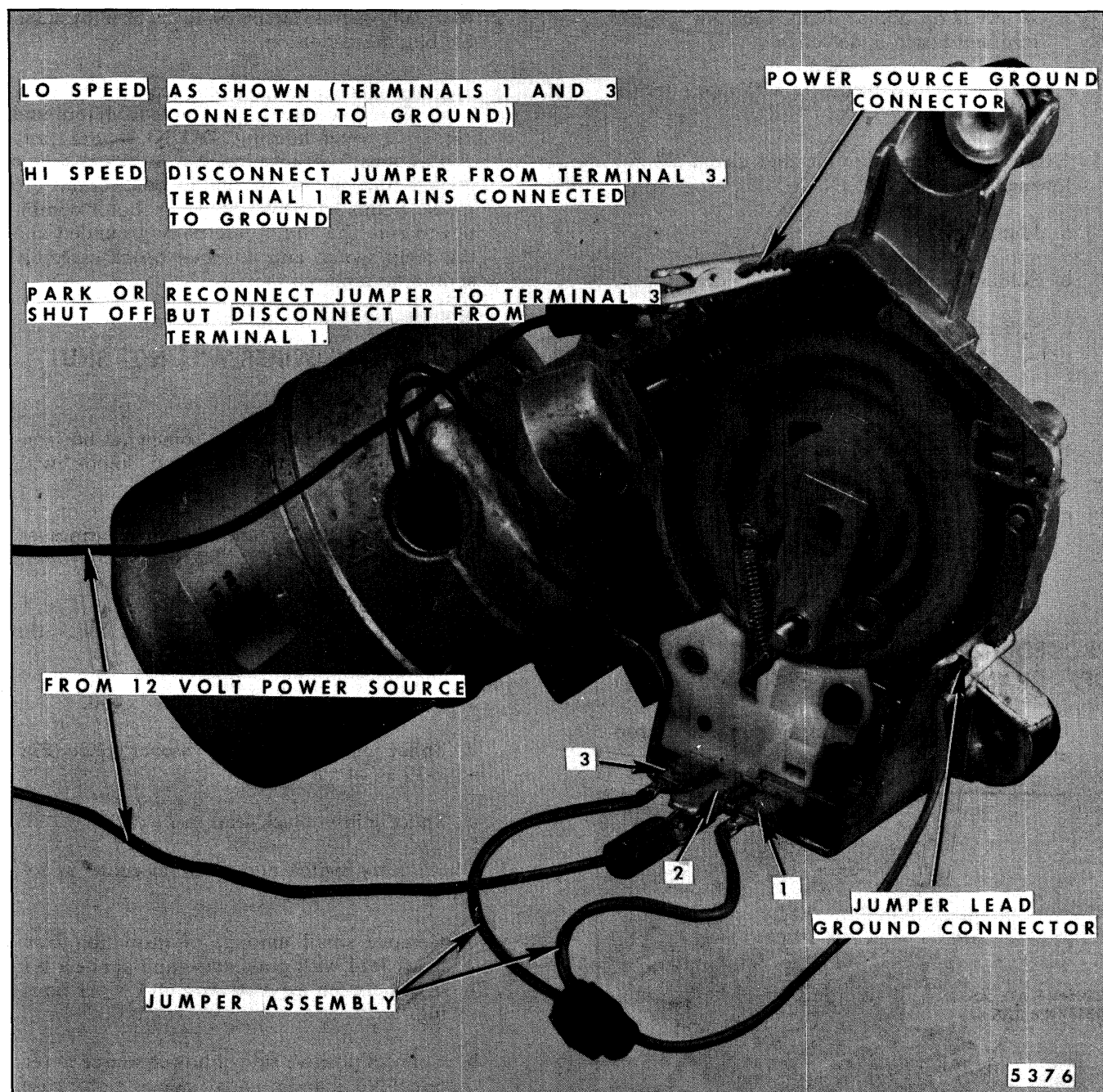


Fig. 2-31-Bench Checking Wiper Motor

black lead that connects to wiper terminal No. 3. Refer to Figure 2-31 for terminal No. 3 location.

2. Disassemble motor section of wiper and check for grounded shunt field coil (Fig. 2-38).

PROCEDURE "E" (WIPER HAS EXCESSIVE SPEED IN "HI" BUT "LO" SPEED IS NORMAL)

Check for open 20 ohm resistor.

PROCEDURE "F" (INTERMITTENT OPERATION)

1. Check solder connections at relay switch and terminal board.
2. Connect wiper to operate in "LO" speed (Fig. 2-31). Connect ammeter (range 0-30 amps.) in feed wire circuit to wiper and observe current draw. Allow motor to run until it becomes hot (see Specification Chart, Fig. 2-48).

- a. If current draw is normal and wiper cycles on and off, a weak circuit breaker is indicated. Replace brush plate assembly.
- b. If current draw exceeds specification, proceed to steps 3, 4 and 5.
3. Adjust armature end play as required and recheck current draw.
4. Adjust gear assembly end play as required and recheck current draw.
5. If adjustments in step 3 and 4 fail to correct excessive current draw condition, disassemble motor section of wiper and check armature on growler for shorted or grounded condition.
3. Remove transmission drive link(s) from motor crank arm.
4. Disconnect wiring and washer hoses.
5. Remove the three motor attaching screws.
6. Remove motor while guiding crank arm through hole.
7. To install, reverse the removal procedure. Motor must be in "park" position when assembling crank arm to transmission drive link(s).

WIPER MOTOR

Removal and Installation

1. Raise hood and remove cowl screen.
2. Reaching through opening, loosen the transmis-

WIPER ARM

Removal and Installation

1. Raise hood to gain access to wiper arms.
2. On "A and F" styles use tool J-8966 or equivalent (Fig. 2-34), and lift arms off transmission

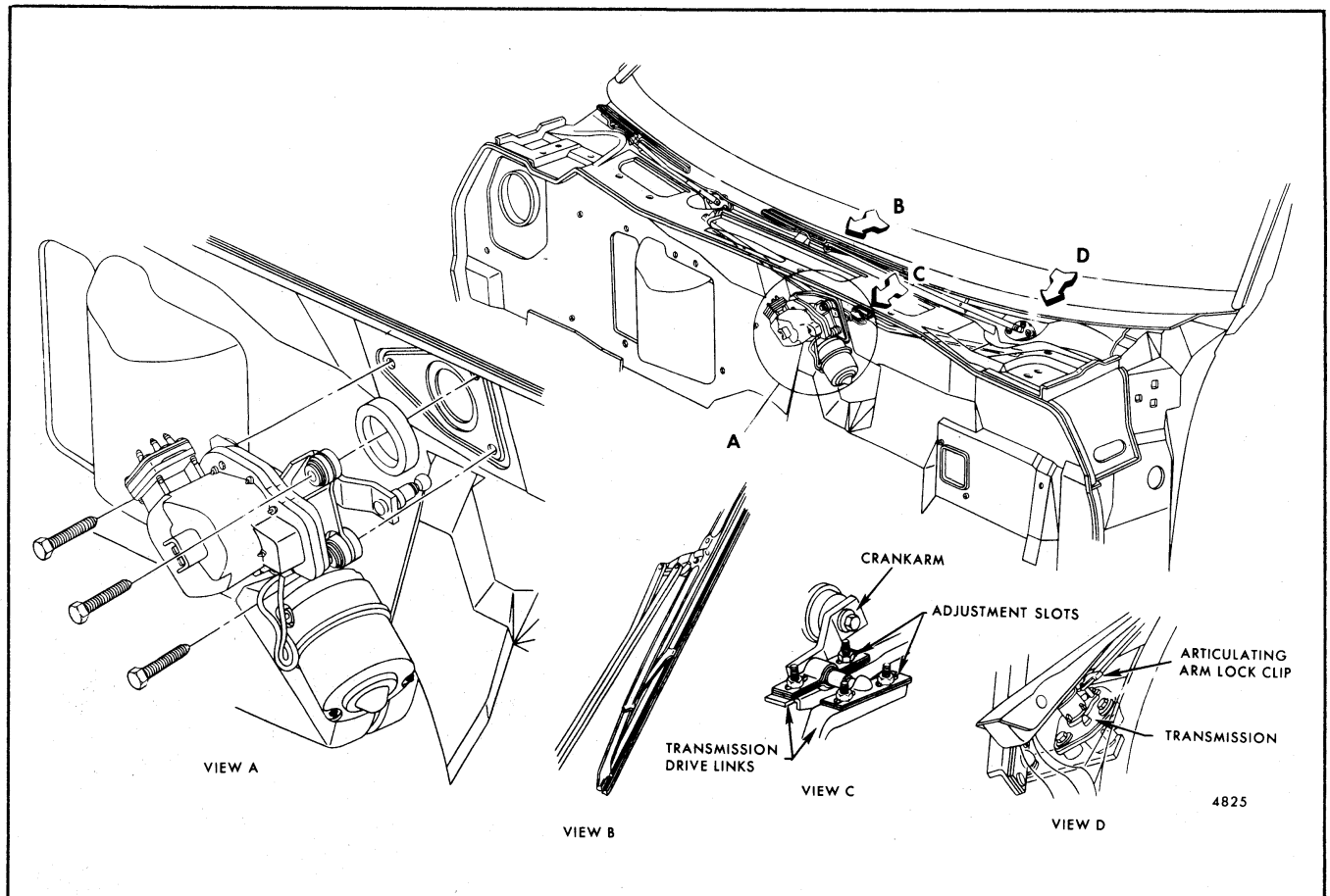


Fig. 2-32-Round Motor Installation - "B-C-D-E" Styles

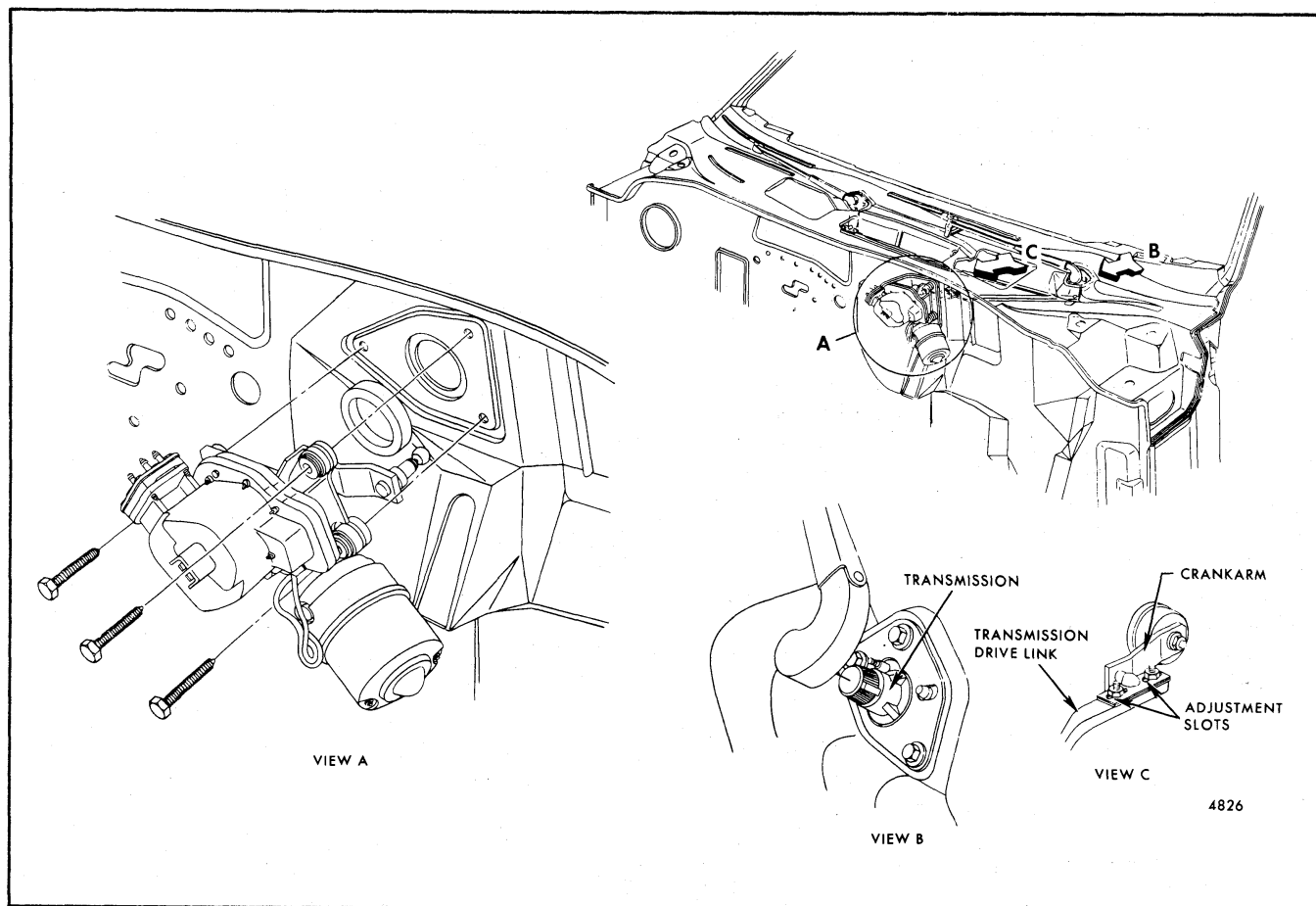


Fig. 2-33-Round Motor Installation "A" Styles

- shaft. On left arm slide articulating arm lock clip away from transmission pivot pin and lift arm off pin.
3. On "B, C, D and E" styles, lift wiper arm and slide latch clip (Fig. 2-35) out from under wiper arm.
 4. Release wiper arm and lift wiper arm assembly off transmission shaft.
 5. On left arm, slide articulating arm lock clip away from transmission pivot pin (Fig. 2-32) and lift arm off pin.
 6. To install left wiper arm assembly, on all styles, lubricate the transmission pivot pin, then, position the articulating arm over the pivot pin and slide the lock clip toward the pivot pin until it locks in place on the pin. Install the left wiper arm assembly to the transmission shaft aligning the keyway to the shaft.
 7. On "A and F" styles align the right wiper arm assembly in the proper "park" position and install wiper arm to transmission shaft.
 8. On "B, C, D and E" styles, align keyway in right wiper arm assembly to transmission shaft and install arm assembly to shaft.

NOTE: On "A and F" styles the same tool used for arm removal may be used to install the arm.

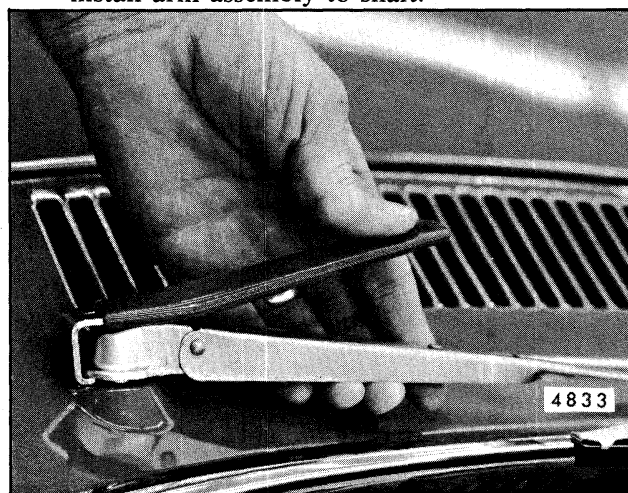


Fig. 2-34-Wiper Arm Removal Tool J-8966 (Or Equivalent)

9. On "B, C, D and E" styles, lift the wiper arm assemblies and slide latch clips (Fig. 2-35) under the arms. Release wiper arms and check wipe pattern and "park" position.

Adjustment

If the wiper arms and blades were in correct adjustment prior to wiper arm removal, adjustment should not be required. However, if adjustment is required, it can be performed as follows:

1. Raise the hood and remove cowl vent screen.
2. On "A and F" styles, remove the right arm and blade assembly.
3. Loosen, do not remove, the transmission drive link to motor crank arm attaching nuts (Fig. 2-32 or 2-33). On "B, C, D and E" styles, if only one arm and blade assembly requires adjustment, loosen only the drive link to crank arm attaching nuts for the unit requiring adjustment.
4. Rotate the left arm assembly on "A and F" styles and both arm assemblies on "B, C, D and E" styles to a position 1" below the blade stops.

NOTE: To prevent damage to washer nozzles, temporarily remove retaining screws, and move nozzles out of the way.

CAUTION: On "B, C, D and E" styles, even if only one arm and blade assembly requires adjustment, the right and left assemblies must be rotated 1" below the stops.



Fig. 2-35-Wiper Arm Latch Clips

5. Tighten the attaching nuts on the transmission drive link(s) to motor crank arm (25 to 35 inch-pounds torque).
6. On "A and F" styles, position the right arm and blade assembly 1" below the blade stop and install arm assembly to transmission shaft.
7. Lift the right and left arm and blade assemblies over the stops.
8. Check wipe pattern (Fig. 2-36) and park position. Dimension "A" shown in Figure 2-36 for various body styles is as follows:
 - a. "A-29-35" styles - 1.75" plus 1.50" or minus .00"
 - b. "A-37-57-80" styles - 1.12" plus 1.50" or minus .00"
 - c. "B-35-45-49-69" and 2BP47 styles - 2.00" plus 1.50" or minus .00"
 - d. "B-39-47-57" (less 2BP47) styles - 1.50" plus 1.50" or minus .00"
 - e. "C-39-49-69-37-47" styles - 2.00" plus 1.50" or minus .00"
 - f. "D-23-33" styles - 2.00" plus 1.50" or minus .00"
 - g. "E-47-57-67-87" styles - 1.50" plus 1.50" or minus .00"
 - h. All "F" styles - 1.25" plus 1.10" or minus .5"

NOTE: The correct park position and outwipe dimension is determined with the wipers operating at "LO" speed on a wet glass.

9. Install cowl vent screen.

WIPER BLADE

Removal and Installation

Two methods are used to retain wiper blades to wiper arms (Fig. 2-37).

1. One method uses a press-type release tab. When the release tab is depressed the blade assembly can be slid off the wiper arm pin.
2. The other method uses a coil spring retainer. A screwdriver must be inserted on top of the spring

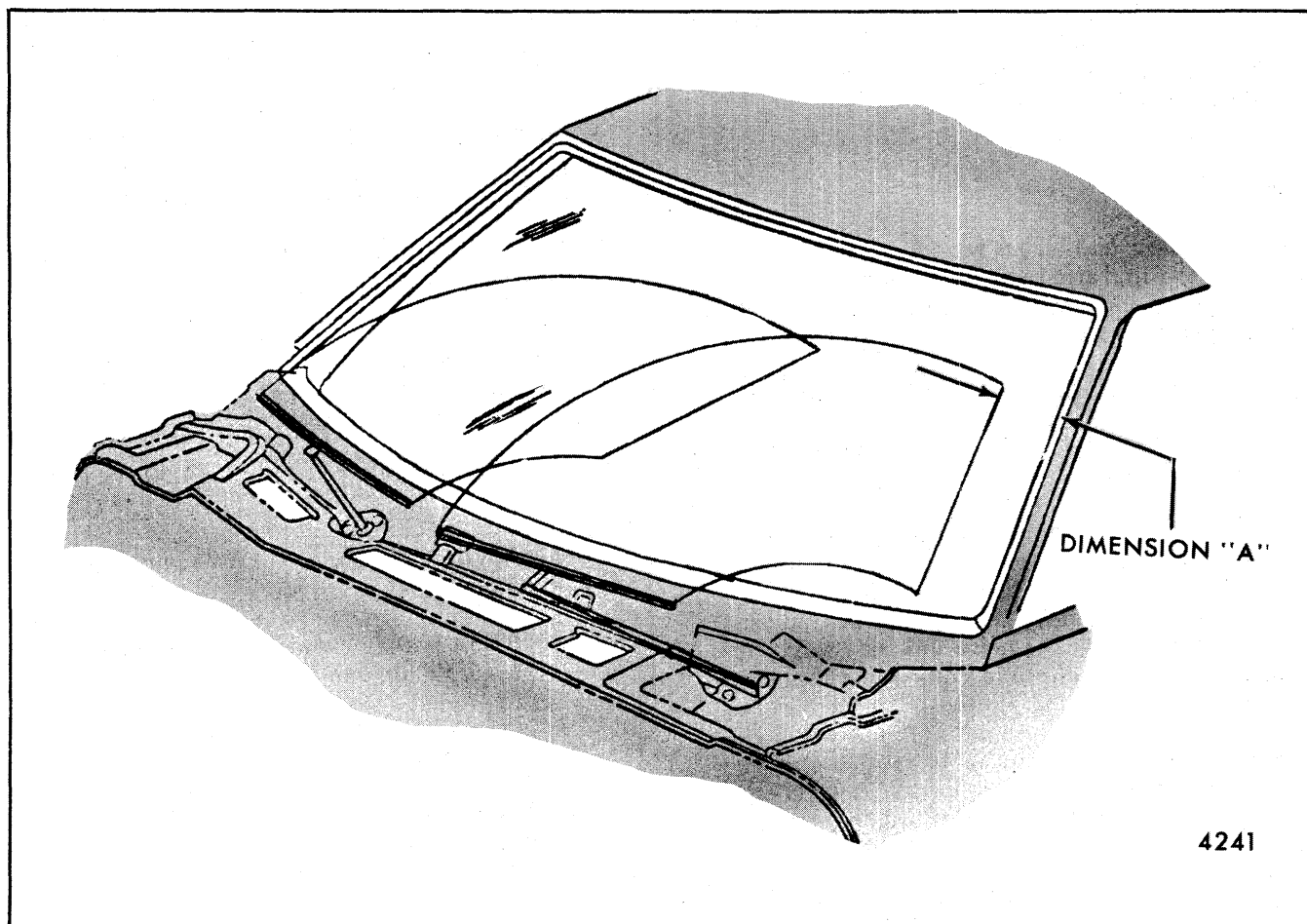


Fig. 2-36-Wipe Pattern

and the spring pushed downward (Fig. 2-37). The blade assembly can then be slid off the wiper arm pin.

Two methods are also used to retain the blade element in the blade assembly (Fig. 2-37).

1. One method uses a press-type button. When the button is depressed, the blade assembly can be slid off the blade element.
2. The other method uses a spring-type retainer clip in the end of the blade element. When the retainer clip is squeezed together, the blade element can be slid out of the blade assembly.

When installing a blade element into a blade assembly, be certain to engage the metal insert of the element into all retaining tabs of the blade assembly.

NOTE: When properly installed, the element release button, or springtype element retaining clip should be at the end of the wiper blade assembly nearest the wiper transmission.

WIPER TRANSMISSION

Removal and Installation

1. Raise hood and remove cowl vent screen.
2. On "A and F" styles, remove right and left wiper arm and blade assemblies. On "B, C, D and E" styles, remove arm and blade assembly only from the transmission to be removed.
3. Loosen (do not remove) attaching nuts securing transmission drive link(s) to motor crank arm (Fig. 2-32 or 2-33).

NOTE: On "B, C, D and E" styles, if only the left transmission is to be removed, it will not be necessary to loosen attaching nuts securing the right transmission drive link to motor crank arm.

4. Disconnect the transmission drive link(s) from the motor crank arm.
5. On "A and F" styles, remove the right and left

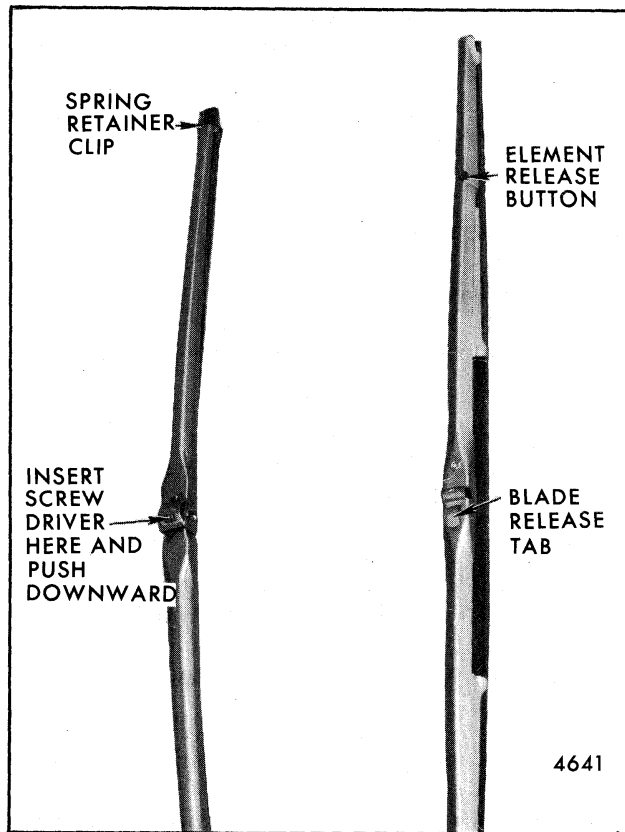


Fig. 2-37-Wiper Blade Assemblies

transmission to body attaching screws. On "B, C, D and E" styles, remove the attaching screws securing the transmission(s) to be removed to the body.

6. Remove transmission(s) and linkage assembly by guiding it through plenum chamber opening.
7. To install transmission(s) and linkage assemblies, position assembly in plenum chamber through the openings.
8. Loosely install transmission to body attaching screws.
9. Install transmission drive link(s) to motor crank arm and tighten attaching nuts to 25 to 35 inch-pounds torque (Fig. 2-32 or 2-33).

NOTE: Wiper motor must be in park position.

10. Align transmission(s) and tighten attaching screws to body.
11. Install wiper arm and blade assemblies and adjust as described under WIPER ARM ADJUSTMENT.

12. Check wiper operation, wipe pattern and park position.
13. Install cowl vent screen.
14. Check washer nozzle alignment.

MOTOR DISASSEMBLY AND ASSEMBLY PROCEDURE

Brush Plate and Circuit Breaker Removal

1. Scribe a reference line along the side of the casting and end cap to insure proper reassembly.
2. Remove the two motor tie bolts.
3. Feed exposed excess length of motor leads through the casting grommet and carefully back the case and field assembly plus the armature away from the casting (Fig. 2-39).

NOTE: It may be necessary to remove the armature end play adjusting screw and insert a rod through the opening in order to apply pressure against the end of the armature.

4. Unsolder the black lead from circuit breaker.
5. Straighten out the four tabs that secure the brush plate to the field coil retainers (Fig. 2-30).

CAUTION: Be careful not to break any of the retainer tabs.

6. Install "U" shaped brush retainer clip over brush holder that has brush lead attached to circuit breaker (Fig. 2-30).

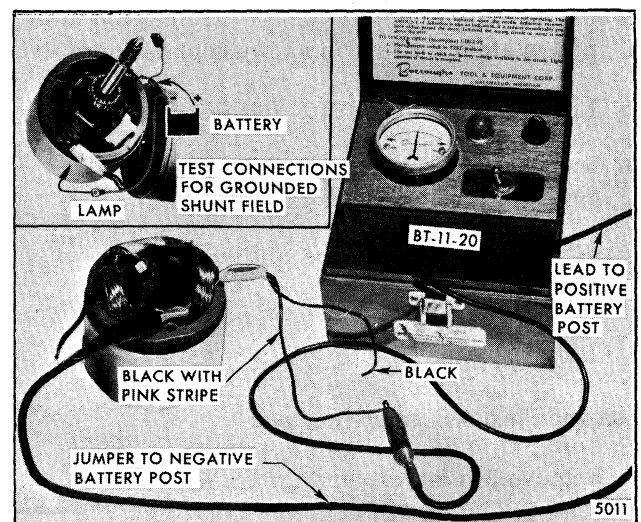


Fig. 2-38-Testing Field Coils

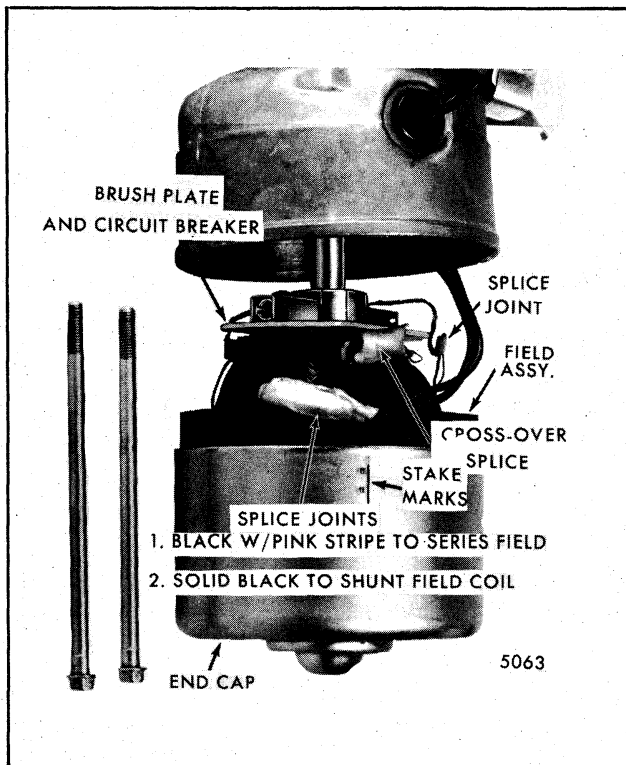


Fig. 2-39-Field and End Cap Assembly

7. Holding the opposite brush from that retained in step 6, carefully lift the brush holder off the mounting tabs far enough to clear the armature commutator.
8. Allow the brush held in step 7 to move out of its holder. Remove the brush spring and lift the brush holder off the armature shaft.

Armature Removal

1. Follow steps 1 thru 8 under brush plate removal.
2. Lift armature out of case and field assembly.
3. Remove thrust ball from end of armature shaft and save for reassembly.

NOTE: Thrust ball may be easily removed with a magnet.

Case and Field Assembly Removal

1. Remove brush plate and armature.
2. The end case and field assembly is serviced as a unit. To free the field and case assembly, cut the

solid black and black with pink stripe leads in a location convenient for splicing.

3. Remove steel thrust plate and rubber disc from case bearing.

Motor Reassembly

1. If new field and case assembly is being installed, splice the black and black with pink stripe leads of the new field with the corresponding leads of the wiper.
2. Install the rubber thrust disc, steel thrust disc and felt lubricating washer in the case assembly bearing in the order indicated.
3. Lubricate end of armature shaft that fits in case bearing with recommended type grease (Fig. 2-48). Next, install thrust ball in end of shaft.
4. Assemble armature in the case and field assembly.
5. Position the partially assembled brush plate (Fig. 2-40) over the armature shaft far enough to allow reassembly of the remaining brush in its brush holder; then position the brush plate assembly on the mounting tabs in the position shown in Figure 2-30.

NOTE: Circuit breaker ground lead will not reach circuit breaker terminal if brush plate is positioned wrong.

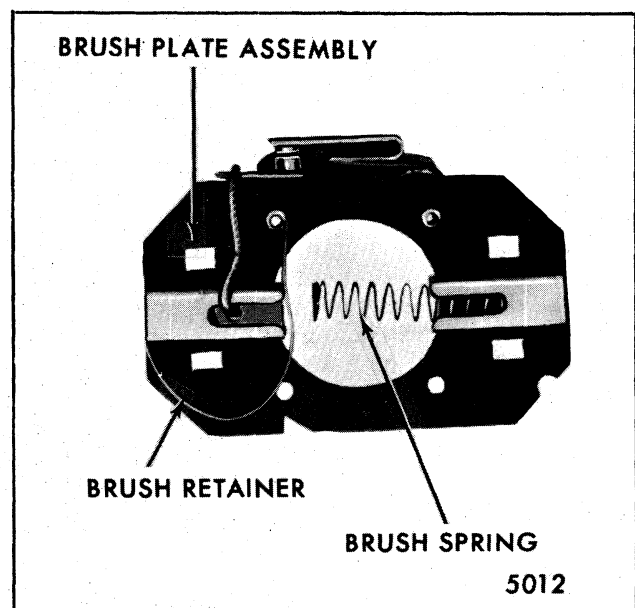


Fig. 2-40-Brush Plate Assembly - Removed

6. Center the brush plate mounting holes over the mounting tabs and bend the tabs toward the brush holders as required to secure the brush plate in position.

NOTE: Be sure tabs are centered in brush plate mounting holes.

7. Remove brush retainer clips and resolder circuit breaker ground lead to circuit breaker.
 8. If new case and field assembly is used, scribe a line on it in the same location as the one scribed on the old case. This will insure proper alignment of the new case with the scribed line made on the housing.
 9. Position armature worm shaft inside the housing and using the scribed reference marks, line up as near as possible the case and field assembly with the housing.
 10. Maintaining the armature in its assembled position in the case, start the armature worm shaft through the field and housing bearing until it starts to mesh with the drive gear. At the same time carefully pull the excess black and black with pink stripe leads through the housing grommet.
- NOTE:** It may be necessary at this point to rotate armature slightly before the armature worm will engage with drive gear teeth.
11. Rotate the case as required to align the bolt holes in the case with those in the housing.
 12. Secure the case to the housing with the two tie bolts.
 13. Adjust armature end play screw (Fig. 2-47).

GEARBOX - DISASSEMBLY AND ASSEMBLY PROCEDURES

Relay Switch and Terminal Board Assembly Removal

1. Remove washer pump.

NOTE: The wiper gear mechanism must be out of the "park" position to remove the relay switch and terminal board assembly.

2. If wiper gear drive pawl is in "park" position (Fig. 2-28), manually trip the latch arm toward the coil and apply feed current to the center terminal of the relay switch and terminal board

and ground to the motor case. The wiper motor will turn the gear, moving the drive pawl out of the park position in the relay switch slot. If applying feed current to the center terminal does not energize the motor, it is possible to remove some of the insulation from the black with pink stripe wire between the motor and the relay switch and apply feed current at this point. Be sure to cover the exposed wire with tape after the operation is completed.

If wiper gear mechanism is not in "park" position (drive pawl away from latch arm in Fig. 2-29), proceed to step 3.

3. Remove relay switch and terminal board attaching screw and carefully lift the assembly out of the gearbox. Unsolder leads as required. Refer to Figure 2-41 when resoldering leads.

Reassembly of Relay Switch and Terminal Board Assembly

1. Resolder leads to relay switch and terminal board assembly as required.

NOTE: Black wire to No. 3 terminal, black with pink stripe wire to fixed contact post.

2. Position relay switch and terminal board assembly in housing.

CAUTION: Be very careful to route leads in such a manner as to avoid having them pinched between relay switch and wiper housing.

3. Install relay switch and terminal board attaching screw.

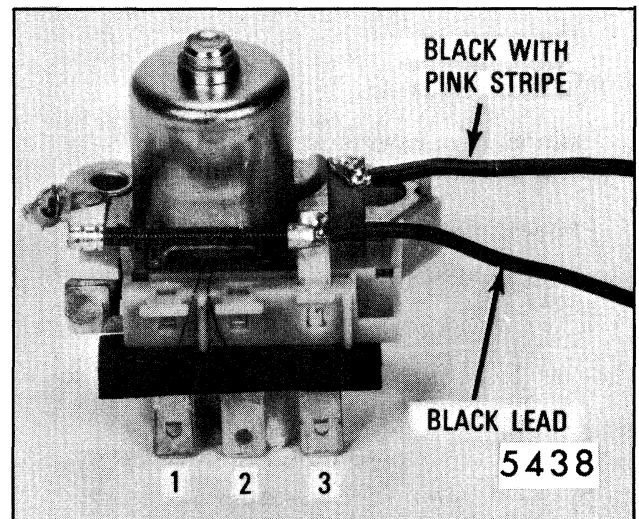


Fig. 2-41-Relay Switch and Terminal Board

4. Install washer pump to wiper motor.

NOTE: Refer to "Round Motor" - Washer System, Assembly of Washer Pump to Wiper Motor.

Drive Gear Disassembly

1. Remove washer pump.
2. Clamp crank arm in a vise and remove crank arm retaining nut.

CAUTION: Failure to clamp crank arm in vise may result in stripping of wiper gears.

3. Remove crank arm, rubber seal cap, retaining ring, shim washers, shield and spacer washer in the order indicated (Fig. 2-42).
4. Slide gear assembly out of housing (Fig. 2-43).

NOTE: If relay switch and terminal board assembly has not been removed, move the latch arm out of the way.

5. Slide drive plate and shaft out of gear and remove the drive pawl, lock pawl and coil spring as required (Fig. 2-44).

NOTE: A drive plate and shaft assembly with two grooves machined in the shaft can be used to service all 1968 through current model depressed park wiper systems. Service instructions included in any replacement package call out which groove to use.

Drive Gear Reassembly

1. Position drive pawl on drive plate.

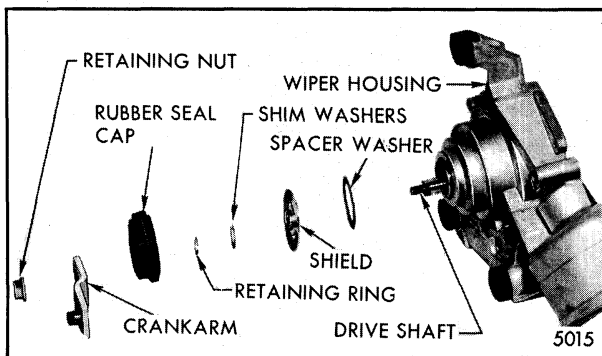


Fig. 2-42-Crank Arm Components - Exploded View

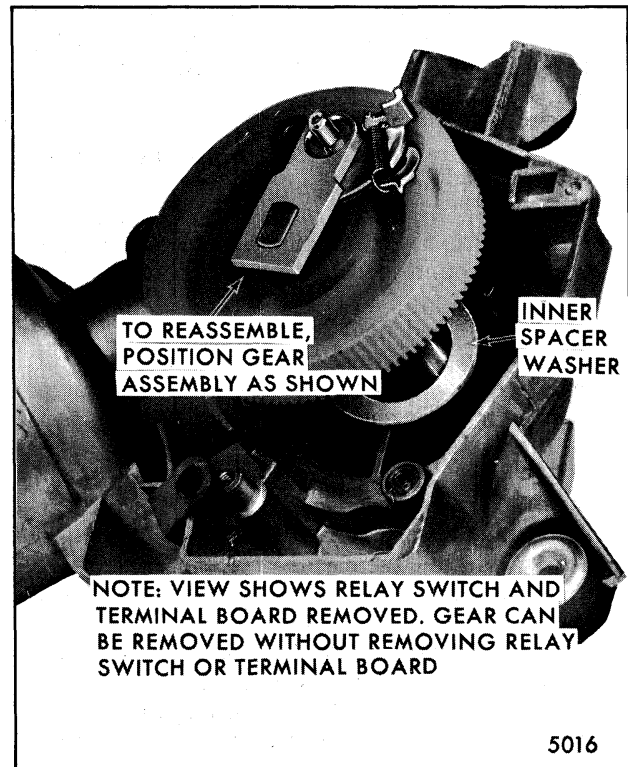


Fig. 2-43-Removing Gear

2. Assemble lock pawl over drive pawl as shown in Figure 2-45.
3. Slide gear and tube over the drive shaft. (Move drive and lock pawls as required to allow their respective pins to fit in the gear guide channel.)
4. Holding the gear, manually rotate the drive plate in the direction of the arrow until the drive and lock pawl guide pins fit into their respective pockets in the gear (Fig. 2-46).
5. Reinstall coil spring between lock and drive pawls.

NOTE: Be very careful to maintain lock and drive pawl guide pins in their respective pockets during step 6.

6. Assemble inner spacer washer over gear shaft and assemble gear mechanism in housing so that it is positioned with respect to the housing in the approximate location shown in Figure 2-43.
7. Reassemble the outer spacer washer, shield, shim washers as required to obtain .004" (plus or minus .002") end play, snap ring and rubber seal cap in the order indicated. Refer to Figure 2-42.



Fig. 2-44-Gear Removed

8. Operate wiper to "park" position and install crank arm in the approximate position shown in Figure 2-47.

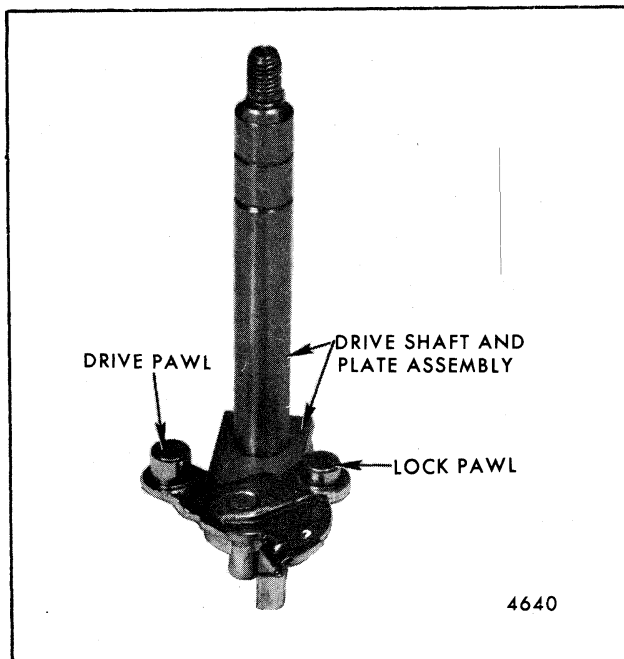


Fig. 2-45-Lock Pawl

CAUTION: *Clamp crank arm in vise before securing retaining nut.*

9. Install washer pump to wiper motor.

NOTE: Refer to WASHER SYSTEM - "Round Motor", Assembly of Washer Pump to Wiper Motor.

WIPER MOTOR ADJUSTMENTS

Armature End Play

1. Loosen adjusting screw locknut (Fig. 2-47) and tighten or loosen the adjusting screw as required until end of screw barely touches end of armature.
2. Back off adjusting screw 1/4 turn and tighten locknut.

Gear Assembly End Play

Add or remove shim washers as required to obtain .004" (plus or minus .002") end play (Fig. 2-42).

MODIFIED PULSE SYSTEM

The "modified" pulse wiper system provides a controlled wiping action. This optional system is available on all "A, B, C, D and E" styles. It utilizes a round motor and wiper blades that park below the hoodline. The system can be identified by a dark gray pump cover and the two electrical leads coming out of the motor grommet (Fig. 2-49). Terminals and electrical leads are shown in Figure 2-50.

Each division uses a different dash switch. The Oldsmobile, Pontiac and Chevrolet switches provide two continuous speeds - LO and HI plus the delay modes. Buick and Cadillac switches provide three continuous speeds - LO, MED and HI as well as the delay modes.

Regardless of the dash switch type, the dash switch lever in the "DELAY" mode can be moved from a "MIN" (minimum) to a "MAX" (maximum) position (Fig. 2-51). The movement of the lever from the MIN to MAX position varies the amount of time the wiper will delay between each wipe. The delay ranges between 0 and approximately 12 seconds depending on the position of the lever. MIN delay or 0 seconds between wipes provides the equivalent of LO speed continuous operation.

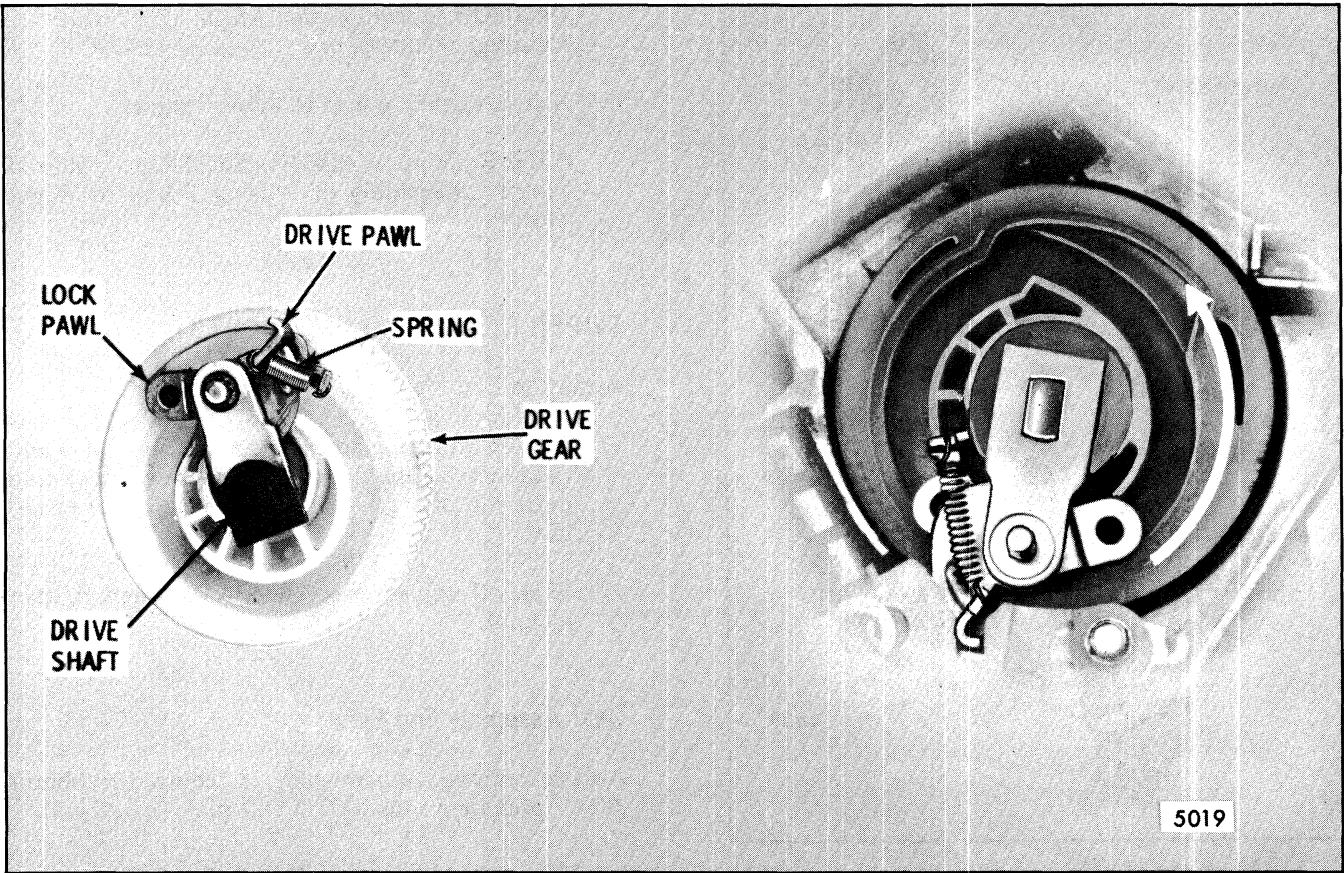


Fig. 2-46-Lock Pawl and Drive Pin Positioning

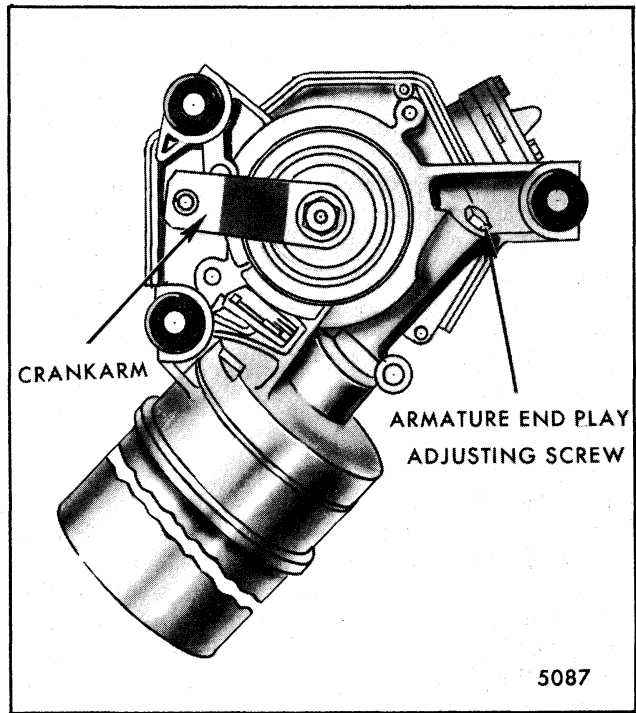


Fig. 2-47-Wiper Motor and Crank Arm in Park Position

SPECIFICATION CHART		
Operating Voltage		12 Volts D. C.
Bench Check (No Load)	Current Draw (AMPS)	Crankarm Speed
	"F" "A-B-C-D-E"	
"Lo" Speed	5.0 Max. 6.0 Max.	35 - 50
"Hi" Speed	4.0 Max. 4.5 Max.	70 - 90
Stall (Cold Motor)		
"Lo" Speed	18.0 Max. 29.0 Max.	0
Torque		Inch Pounds
Washer Pump Mounting Screws		18
Armature Adjusting Screw Jam Nut.		50
Motor Tie Bolts		30
Gear Box Relay Attaching Screw.		30
Motor Crankarm Attaching Nut.	300	350
Motor Crankarm to Transmission Drive Link	25	35
Motor to Body Attaching Bolts	30	45
Transmission to Body Attaching Bolts.	57	72
Lubrication		
Gear Teeth	Multifak EP-1 or Equivalent	5379
Gear Shaft		
Gear Camtrack		
Seal Cap (Inside)		
Armature Shaft		
Armature Worm		

Fig. 2-48-Specification Chart-Round Motor

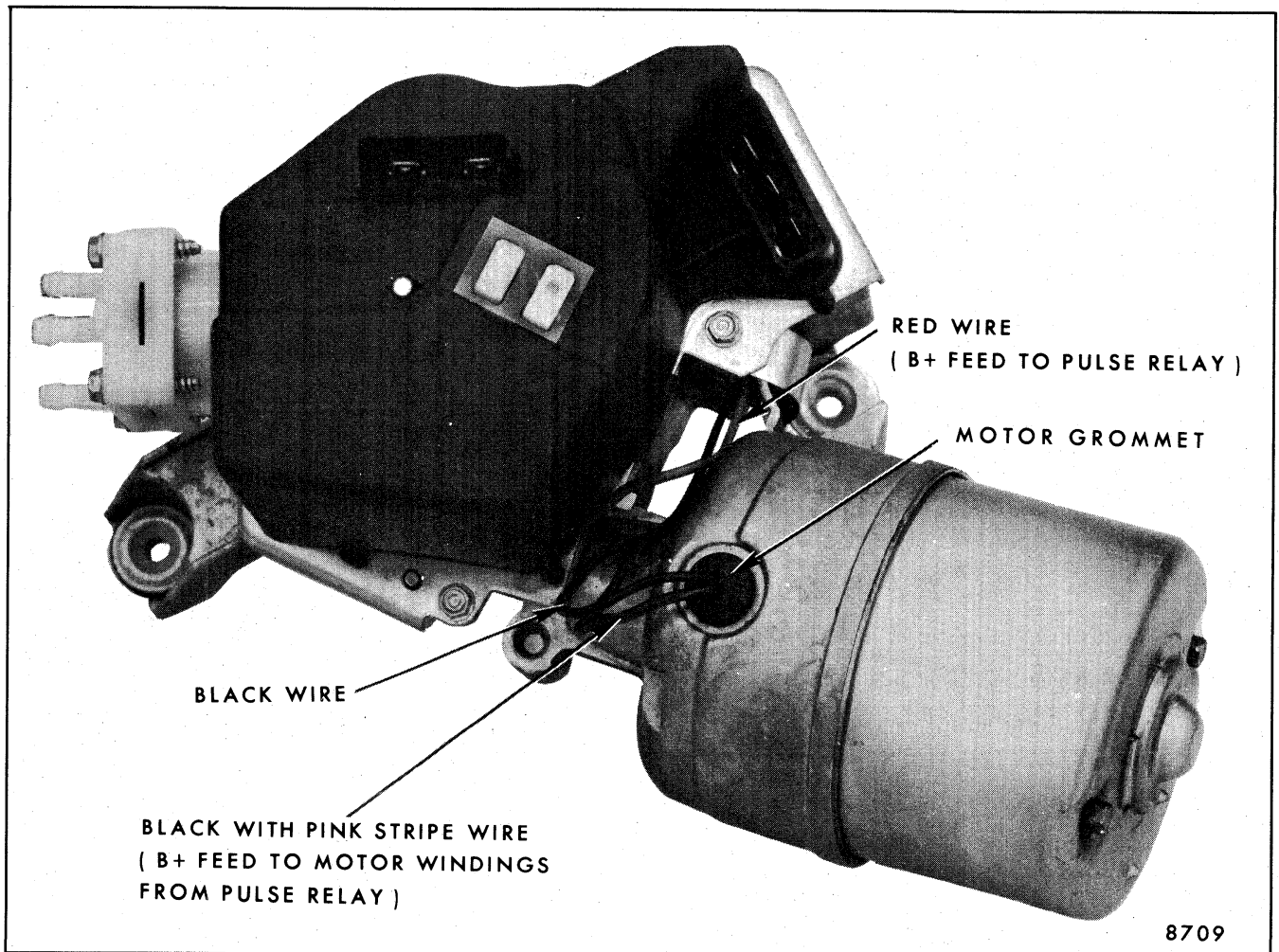


Fig. 2-49-Modified Pulse Wiper Motor and Pump Assembly.

LO speed position on Buick, Chevrolet, Oldsmobile and Pontiac switches is actually the MIN delay mode. The Cadillac switch, however, bypasses the delay circuit for its continuous LO speed. This will be covered under "Wiper Motor Operation".

The modified pulse wiper motor less the washer pump is very similar to the 1-3/4" stack standard depressed park wiper motor except for the red wire shown in Figure 2-49. The red lead is attached to the gearbox relay terminal and provides a B plus path to the pulse relay when the gearbox relay is energized.

Motor Operation

NOTE: The dash switches are a combination of switches and a variable resistor controlled by a single lever and a wash button switch (Fig. 2-52).

Two relays control the starting and stopping of the wiper motor.

1. Gearbox Relay
2. Pulse Relay

Both of the relays must function in order for the wiper motor to operate. Detailed explanation of each relay circuit follows:

Gearbox Relay

The gearbox relay acts as a switch that turns the B plus supply to the pulse relay on and off.

Referring to Figure 2-53, note that the ignition switch completes the B plus circuit from the battery to one side of the relay coil and to one of the relay switch contacts. Turning the dash switch to the LO, MEDIUM (Buick, Cadillac), HI or DELAY positions completes the gearbox relay coil circuit to ground. This causes the gearbox relay switch contacts to close completing the B plus circuit to the

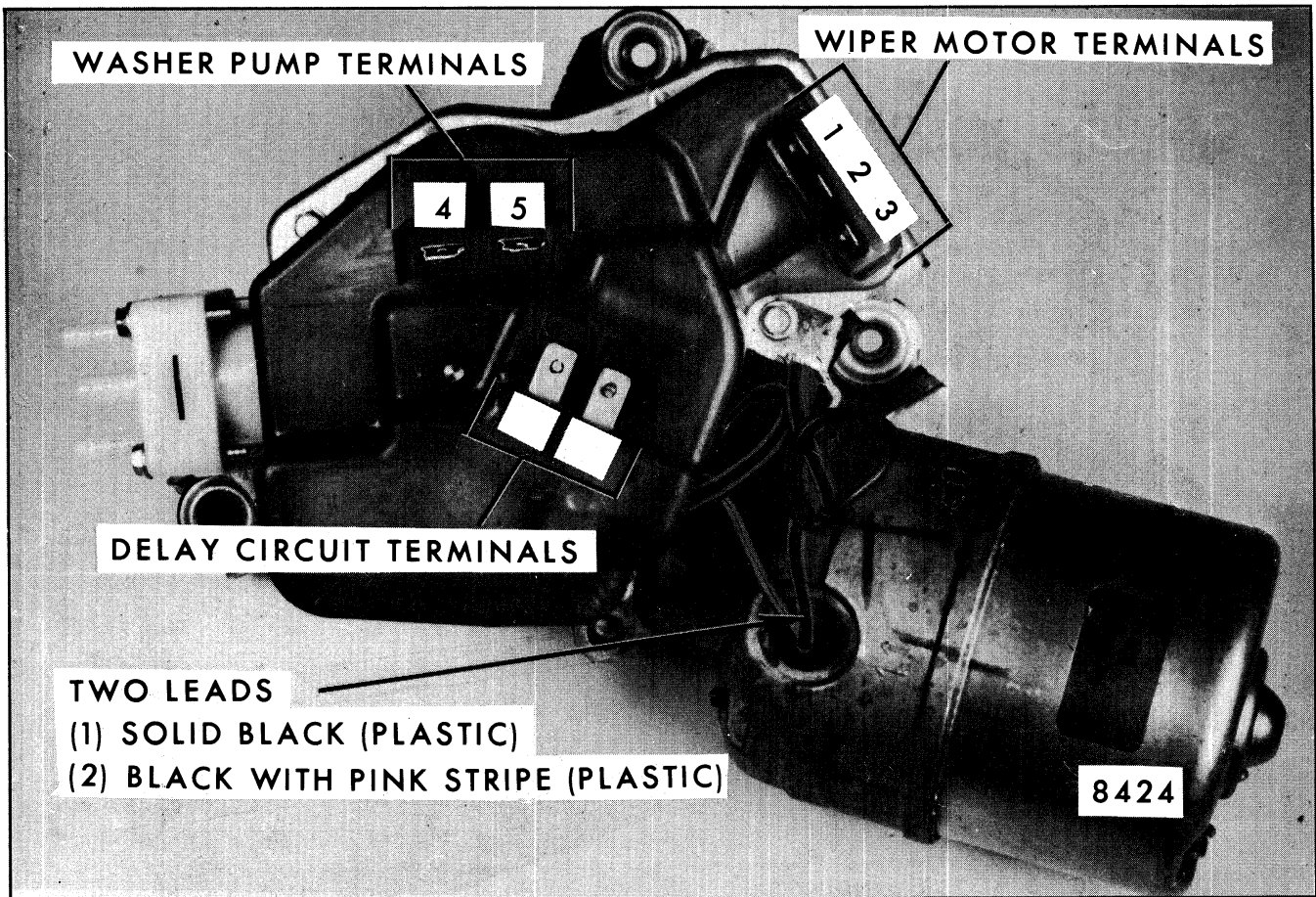


Fig. 2-50-Modified Pulse Wiper Terminals and Electrical Leads

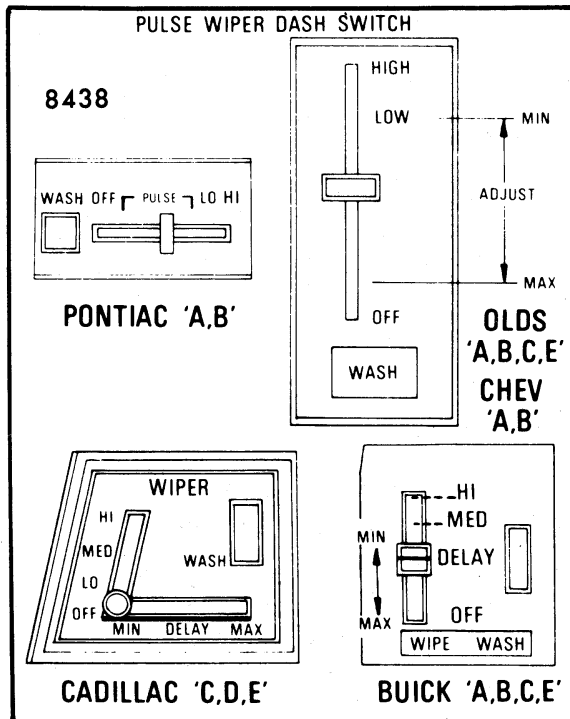


Fig. 2-51-Pulse Wiper Dash Switches

pulse relay. The pulse relay circuit is covered under "Pulse Relay".

Pulse Relay

The purpose of the pulse relay is to provide B plus supply to the motor windings. This is accomplished by the pulse relay switch contacts when the coil circuit is completed to ground by either the dash switch or the timing circuit, depending upon the position of the dash switch. Actually, the dash switch and the timing circuits are parallel paths to ground for the pulse relay coil. Different switches are used by the various car divisions and the variations for each are explained as they occur.

Cadillac - Referring to Figure 2-53 note that the pulse relay coil circuit is completed to ground at the dash switch in the OFF, LO, MEDIUM and HI positions. Thus whenever the dash switch is moved to LO, MEDIUM or HI, the gearbox and pulse relay circuits are completed almost simultaneously which in turn completes the motor circuit. The wiper motor then operates continuously in the speed selected by the dash switch position.

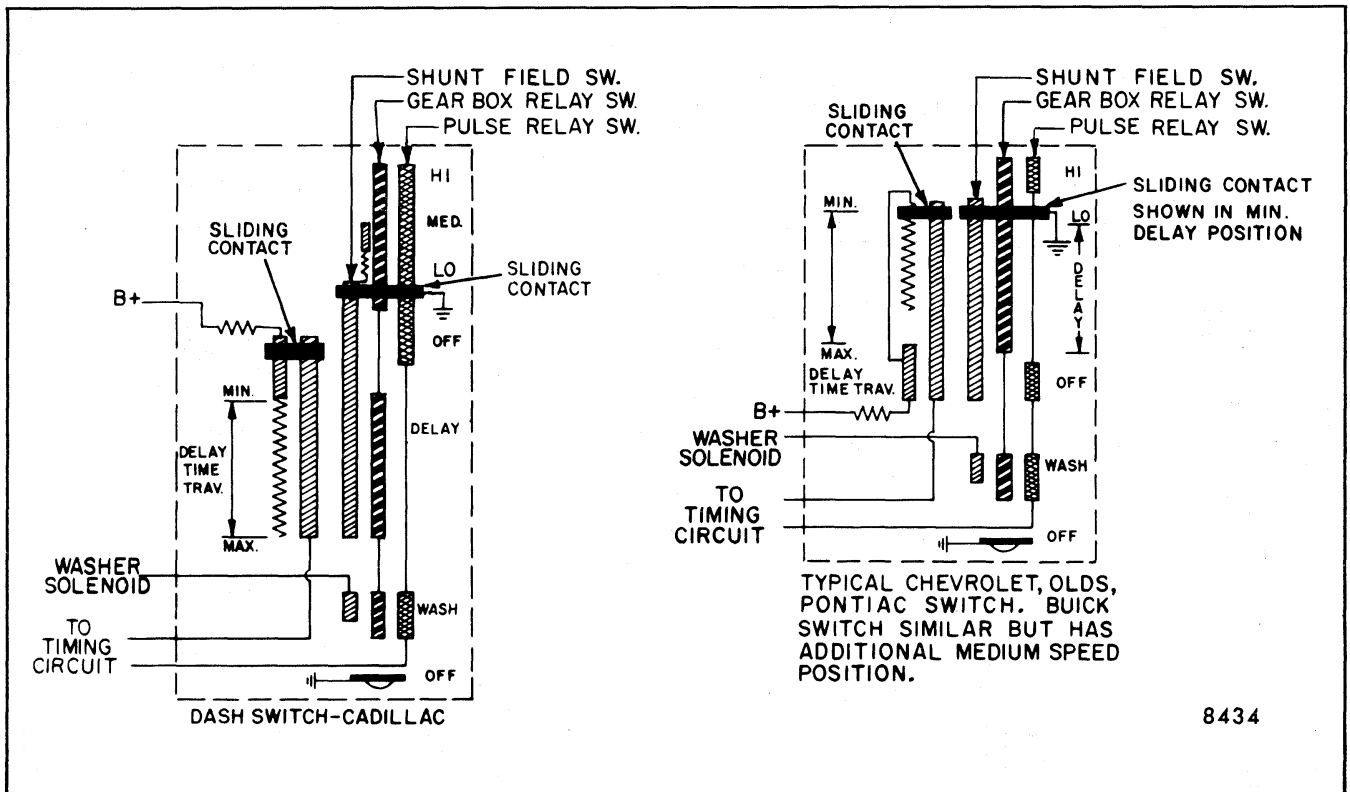


Fig. 2-52-Dash Switch Diagrams

When the dash switch is moved to the "DELAY" mode, the pulse relay coil circuit is opened at the dash switch and the coil circuit will then be completed by the timing circuit as explained under "Pulse Relay Coil Circuit via the Timing Device".

Buick, Chevrolet, Oldsmobile and Pontiac - The pulse relay coil circuit is connected to ground at the dash switch in OFF, MEDIUM (Buick) and HI positions (Fig. 2-53). In LO dash switch position, the switch is actually in the MIN delay position and the coil circuit is completed to ground via the timing device.

NOTE: MIN delay provides continuous LO speed operation. When the dash switch is moved from the MIN delay position toward the MAX delay, pulse wiper motor operation is attained.

Pulse Relay Coil Circuit via the Timing Device

NOTE: B plus is completed to the pulse relay coil when the gearbox relay is energized.

Regardless of application, the timing circuit for the pulse relay functions the same.

The timing circuit consists of two diodes, capacitor,

variable resistor, transistor and holding switch. The diodes, capacitor, transistor and holding switch are located on the washer pump. The variable resistor is part of the dash switch.

The timing circuit functions as follows: Voltage applied to the capacitor via the variable resistor in the dash switch causes it to charge up (Fig. 2-54). When the capacitor reaches a predetermined charge it causes the transistor to turn on like a switch, completing the circuit to ground for the pulse relay coil (Fig. 2-55). This completes the pulse relay coil circuit and the pulse relay switch contacts close completing the B plus feed circuit to the motor.

The holding switch contacts are held open by a fin on the washer pump drive cam (Fig. 2-56). When the wiper starts to run, the fin is moved away from the holding switch permitting the contacts to close.

Closing the contacts accomplishes a dual function:

1. The capacitor is partially discharged in preparation for the next delay period. This also turns off the transistor.
2. A holding circuit to ground for the pulse relay coil is provided until the wiping stroke is completed.

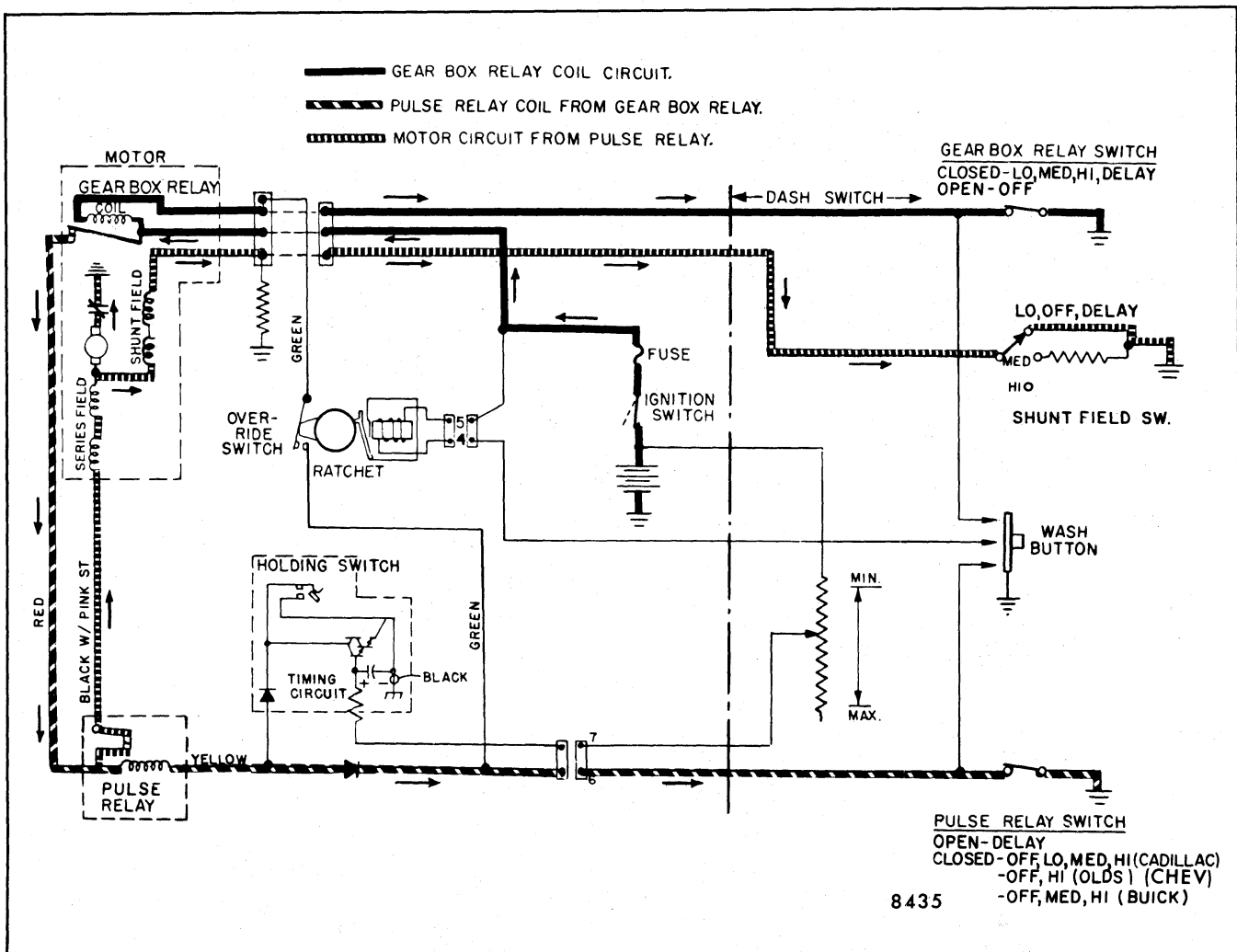


Fig. 2-53-Dash Switch in "LO" Speed - Cadillac

The wiping stroke is completed and the wiper shuts off when the fin on the washer pump drive cam re-opens the holding switch contacts.

When the holding switch contacts open, the capacitor again starts charging to repeat the cycle.

NOTE: When the wiper is operating in the delay mode, the blades stop at the end of the normal wipe pattern (i.e., blades do not move down in their normal park position).

The amount of delay between wiping strokes is controlled by the variable resistor in the dash switch. Increasing the resistance increases the amount of time between wipe strokes.

LO-MEDIUM-HI Speed Motor Operation

Wiper motor speed variations are accomplished by changing the strength of the shunt field as follows:

1. **LO SPEED** - The shunt field is connected directly to ground at the dash switch in the "LO", "DELAY" and "OFF" positions.
2. **MEDIUM SPEED** - (Cadillac - Buick) The shunt field circuit is completed to ground via two resistors which are actually connected in parallel. One resistor is located near the terminal board on the wiper motor gearbox relay, the other resistor is located on the dash switch.
3. **HI SPEED** - The shunt field circuit is opened to ground at the dash switch. However, it is completed to ground through the resistor located on the motor terminal board relay assembly.

Shutting the Wiper "OFF"

Moving the dash switch to the "OFF" position accomplishes three functions:

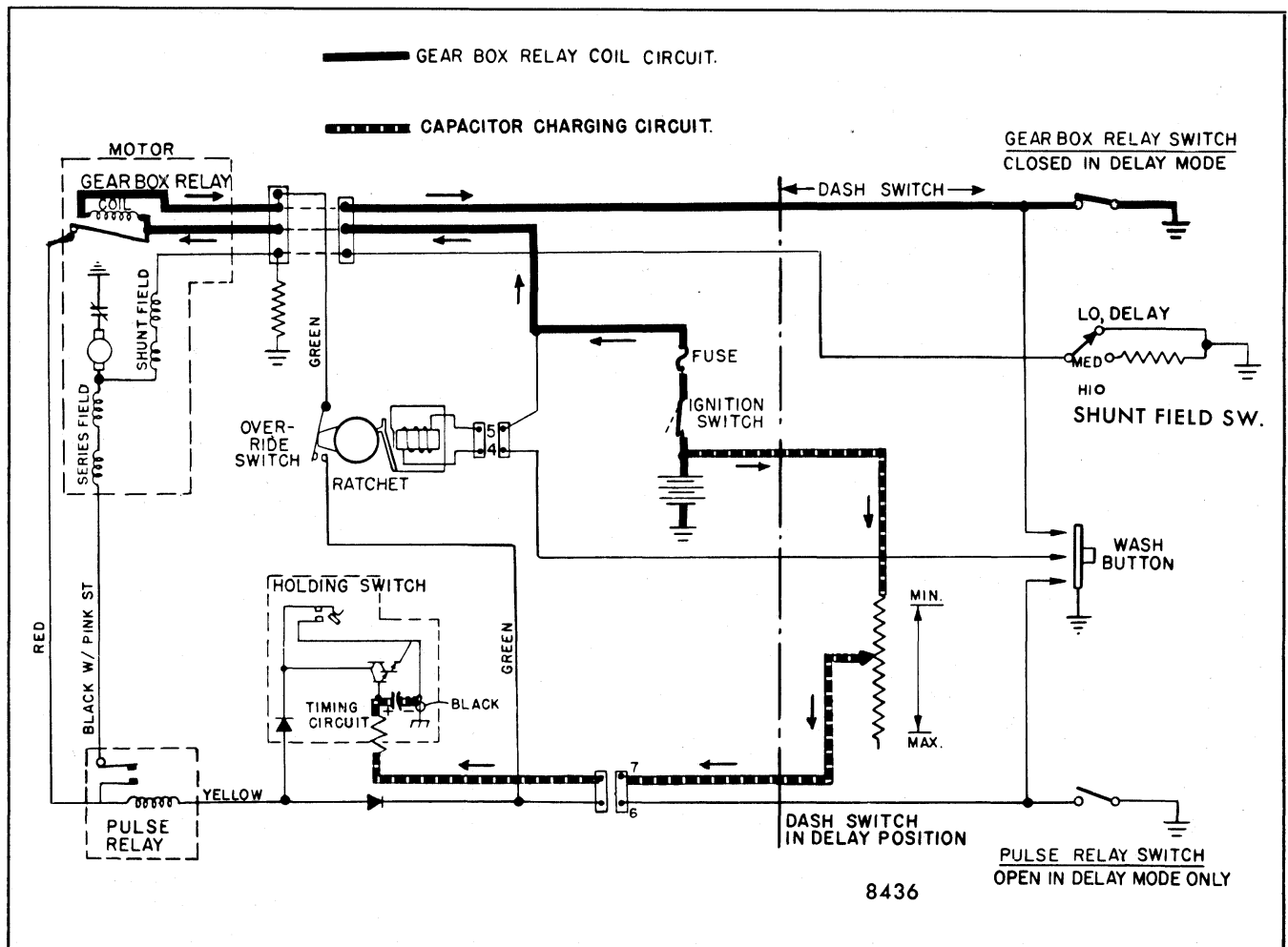


Fig. 2-54-Timing Capacitor Charging Circuit

1. The gearbox relay coil circuit is opened allowing the spring-loaded relay latch arm to move out into the path of the gear mechanism (Fig. 2-57). However, the gearbox relay switch contacts are still closed and therefore the B plus circuit to the pulse relay is still maintained.
2. The pulse relay coil circuit is connected directly to ground at the dash switch. This will maintain the motor B plus feed circuit via the relay contacts during the park cycle.
3. The shunt field is connected directly to ground at the dash switch to maintain LO speed operation during park cycle.

The continuing rotation of the motor gear causes the gear drive pawl to engage the relay latch arm (Fig. 2-58). This action unlocks the output shaft and wiper crank arm from the gear. The output shaft extends through the gear tube off center and as the gear continues to rotate a cam action results.

When the cam action described above is completed

it accomplishes two functions:

1. It causes the gear assembly drive pawl to push the relay latch arm into the relay housing (Fig. 2-59), which in turn opens the relay switch contacts. This opens the B plus circuit to the pulse relay coil. The pulse relay contacts then open which shuts off the B plus feed to the motor.
2. Since the wiper crank arm is attached to the wiper output shaft, the resulting cam action, previously described, causes a somewhat lateral movement of the crank arm. This lateral movement causes the wiper transmission to produce the additional angular rotation to move the blades into the full park position below hood level.

DIAGNOSTIC PROCEDURES

The diagnosis procedures covered in this manual are based on certain key tests and operational checks that will help locate the problem.

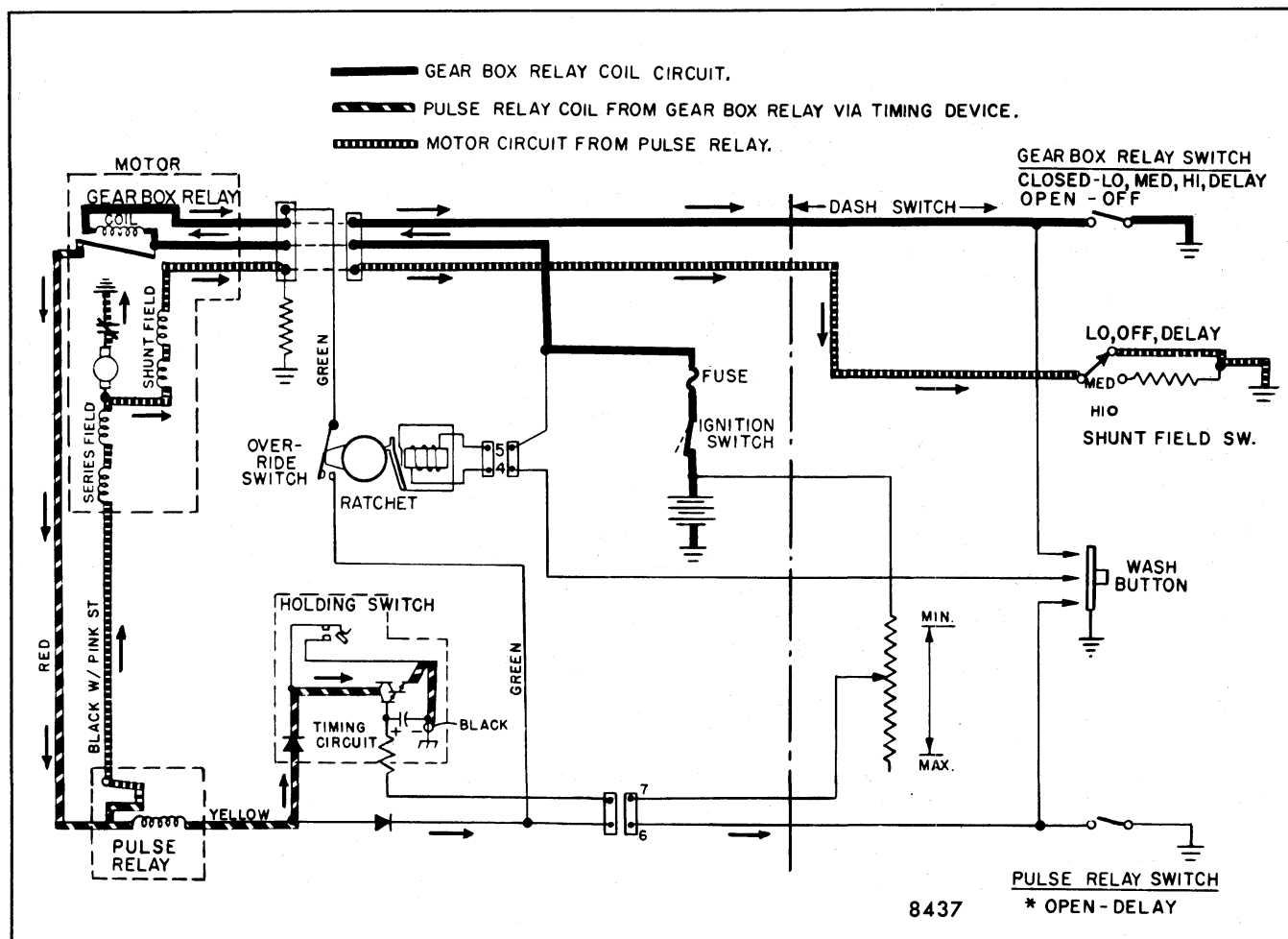


Fig. 2-55-Pulse Relay Coil Circuit via Timing Device

NOTE: Illustrations referred to within the diagnostic procedures are shown following the complete procedures.

Prior to starting the diagnosis procedure, it is very important to confirm the reported condition with a complete operational check, including the washer system. Then match up the condition with one in the Diagnosis Chart.

NOTE: When the diagnosis procedure requires removal of the washer pump, BE SURE to refer to "Washer Pump Cover Removal". If wiper unit (wiper-washer assembly) is to be diagnosed on a detached

basis, refer to "Bench Operational Test". Determine trouble that exists then refer to the diagnostic procedures.

It is possible that a wiper may have more than one problem. When this exists, and one problem has been located and repaired, refer back to the chart and follow the procedures for the second condition.

CAUTION: When a substitute dash switch is tried in the system, BE SURE to connect it to ground to prevent damage to timing circuit components.

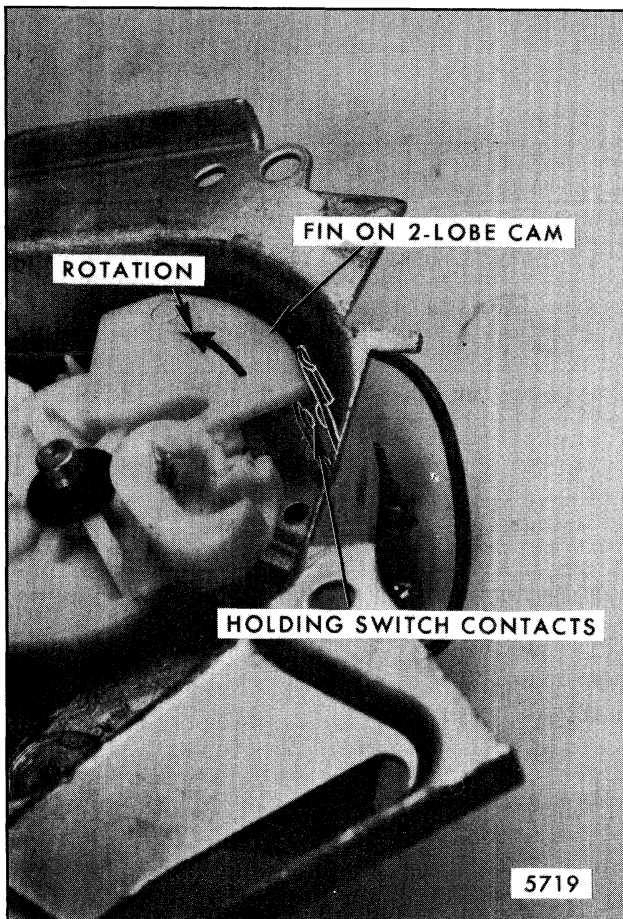


Fig. 2-56-Holding Switch Contacts

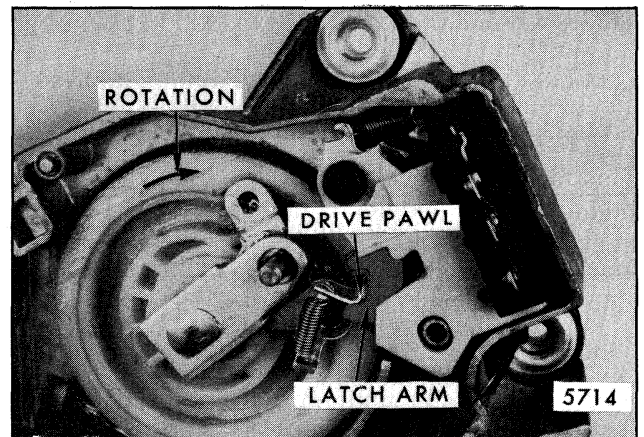


Fig. 2-58-Wiper Shutting "Off"

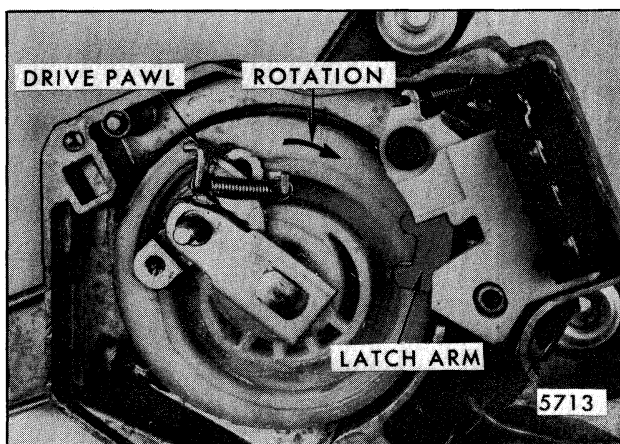


Fig. 2-57-Gear in Normal Run Position

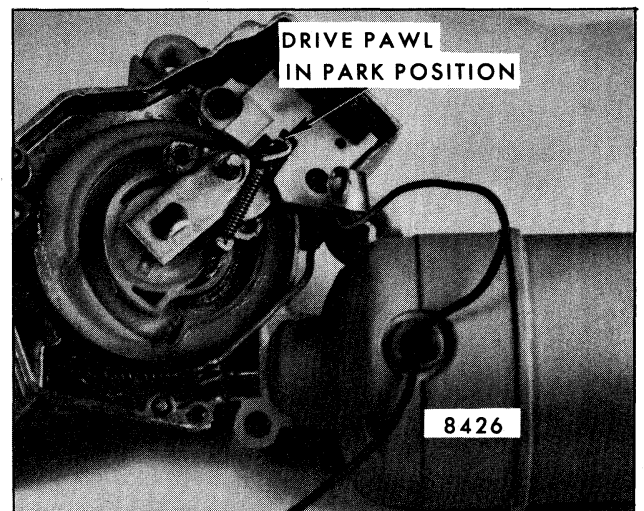


Fig. 2-59-Drive Pawl in "Park"

DIAGNOSIS CHART
MODIFIED PULSE WIPER SYSTEM

CONDITION	REFERENCE	CONDITION	REFERENCE
1. Wiper system inoperative	Fig. 2-61 2-62	5. Wiper won't shut off and washer pump pumps continuously.	Fig. 2-66
2. Wiper inoperative in "Delay Mode". IMPORTANT: Lo speed on Buick, Chevrolet, Olds and Pontiac applications is actually "Minimum Delay".	Fig. 2-63	6. Wiper won't shut off - blades move in and out of park position (15-20° travel).	Fig. 2-67
3. Wiper will not delay between wipes - runs steady with dash switch lever in any delay position - Min. to Max.	Fig. 2-64	7. Wiper has "HI" speed only	Fig. 2-68
4. Wiper won't shut off and blades operate thru normal wipe pattern. (Washer pump not pumping).	Fig. 2-65	8. Wiper has "LO" speed only. Operates correctly in delay mode and shut off ok).	Fig. 2-69
		9. Intermittent wiper operation. (Blades Stop at random positions on windshield).	Fig. 2-70

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Fig. 2-60-Modified Pulse Wiper System Diagnosis Chart Index

WIPER MOTOR INOPERATIVE (WILL NOT RUN IN ANY DASH SWITCH POSITION)

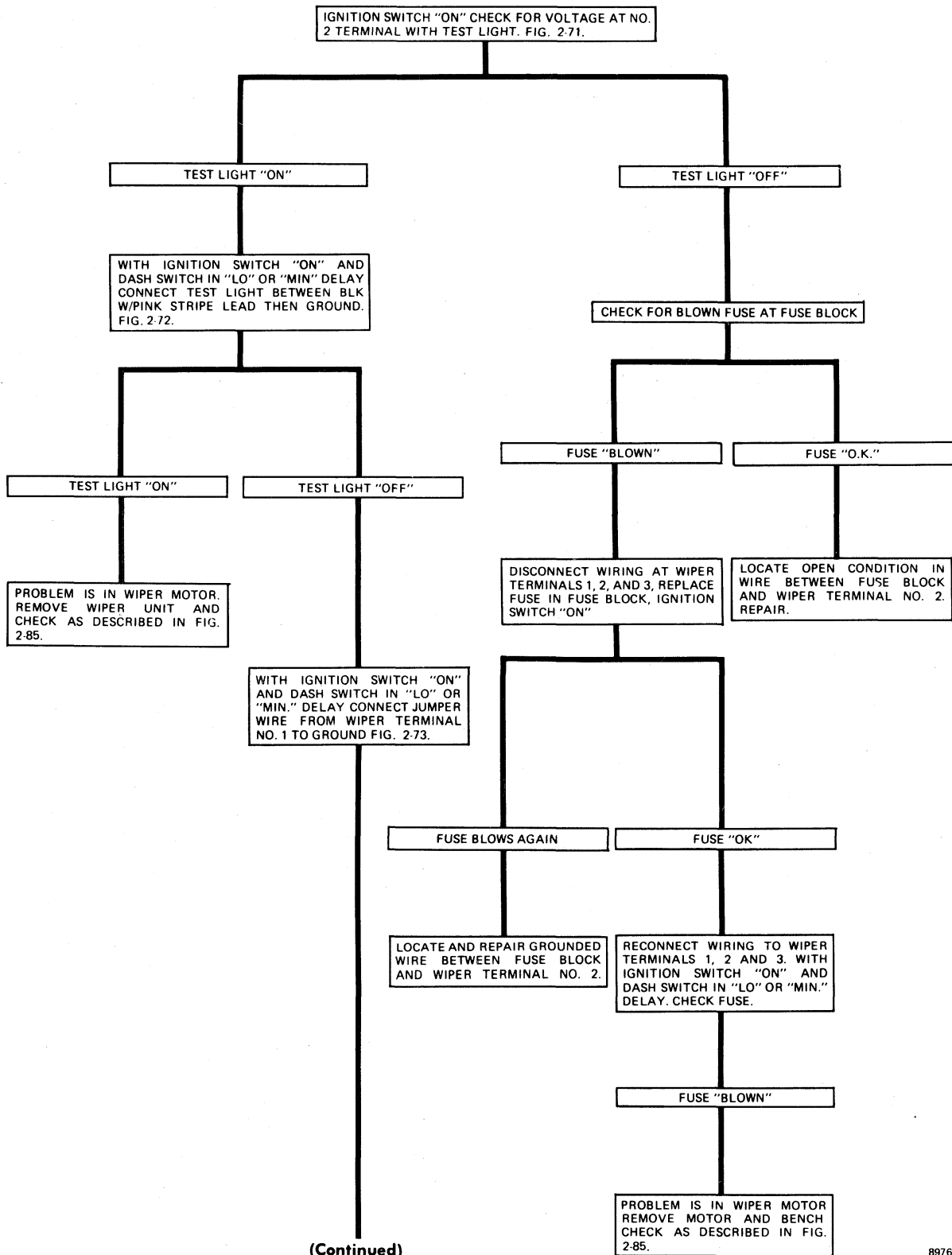


Fig. 2-61-Modified Pulse Wiper Diagnosis Chart - Condition 1

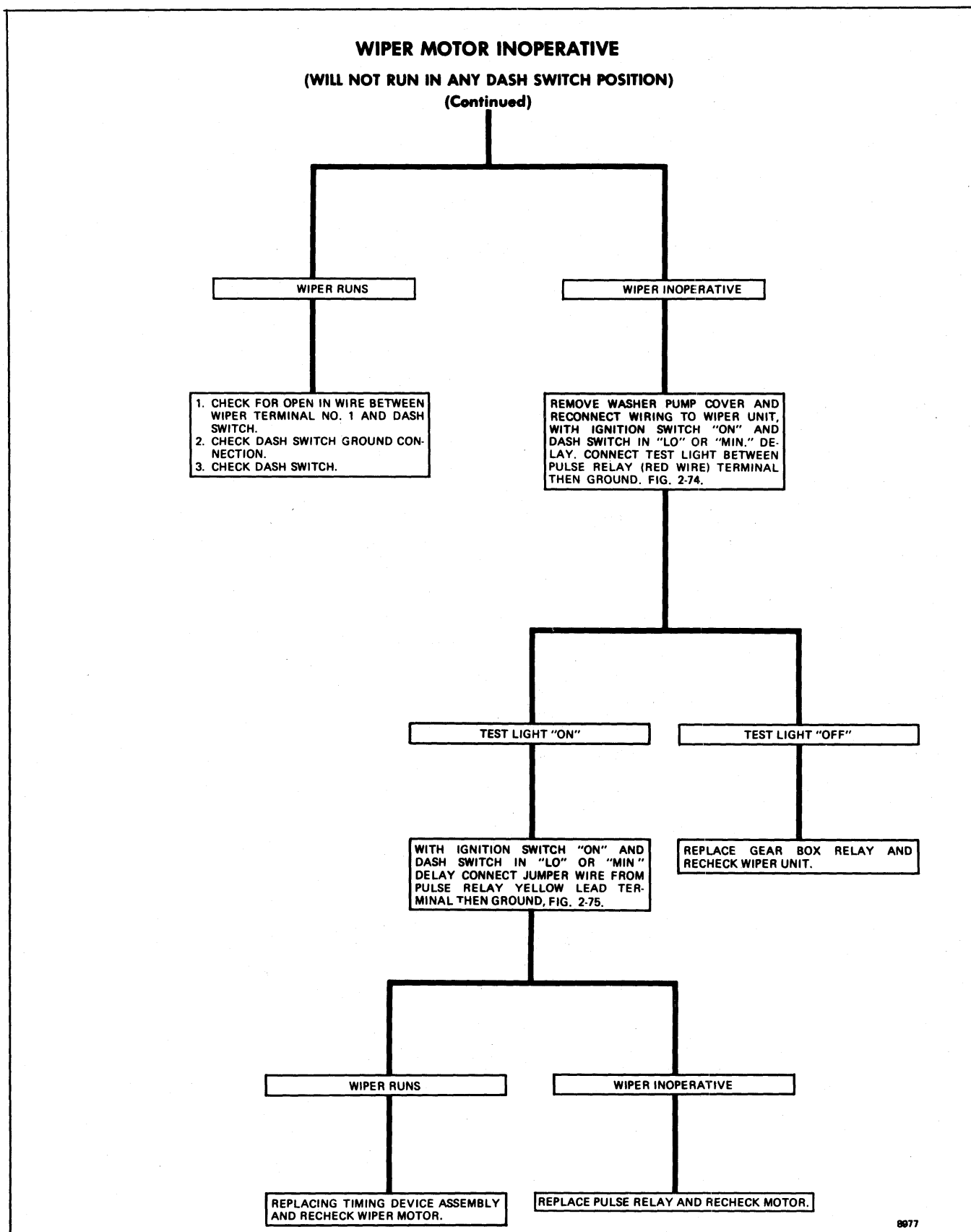
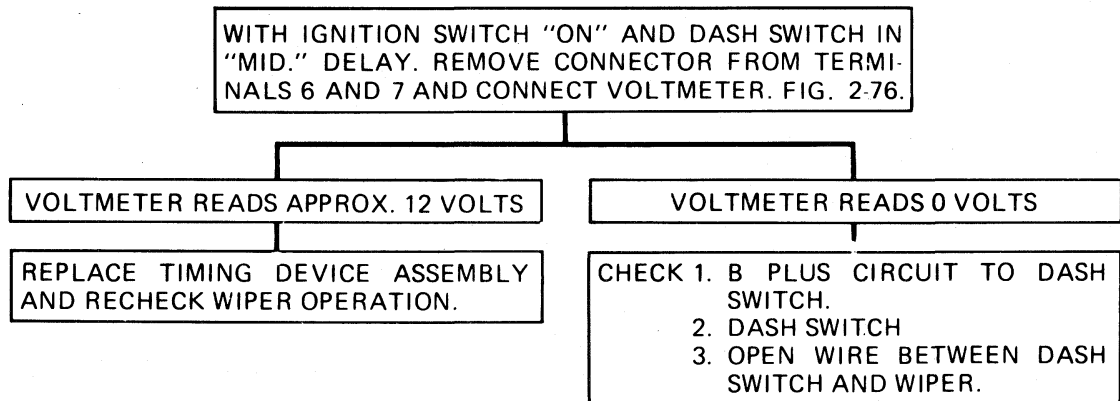


Fig. 2-62-Modified Pulse Wiper Diagnosis Chart - Condition 1

**WIPER INOPERATIVE IN DELAY MODE
OPERATES CORRECTLY IN LO, MED, HI — CADILLAC
MED, HI — BUICK
HI — CHEVROLET, OLDS, PONTIAC**



8978

Fig. 2-63-Modified Pulse Wiper Diagnosis Chart - Condition 2

WIPER WILL NOT DELAY BETWEEN WIPES — RUNS STEADY WITH DASH SWITCH IN DELAY MODE

(WIPER OPERATES CORRECTLY IN OTHER
MODES AND SHUTS "OFF" O.K.)

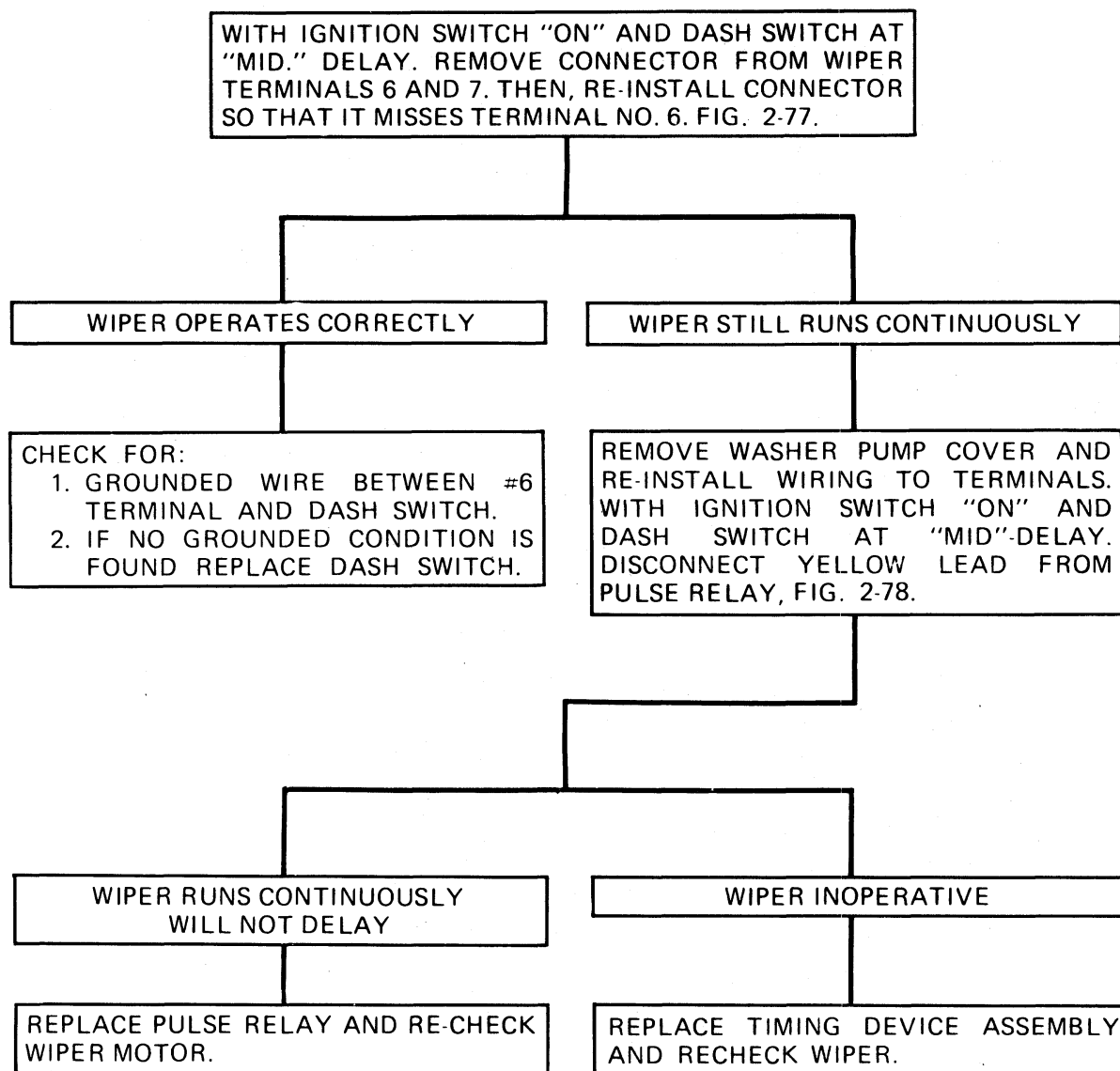


Fig. 2-64-Modified Pulse Wiper Diagnosis Chart - Condition 3

WIPER WON'T SHUT "OFF" (BLADES OPERATE THROUGH NORMAL WIPE PATTERN)

**NOTE: IF WASHER PUMP IS ALSO PUMPING
CONTINUOUSLY REFER TO CONDITION NO. 5**

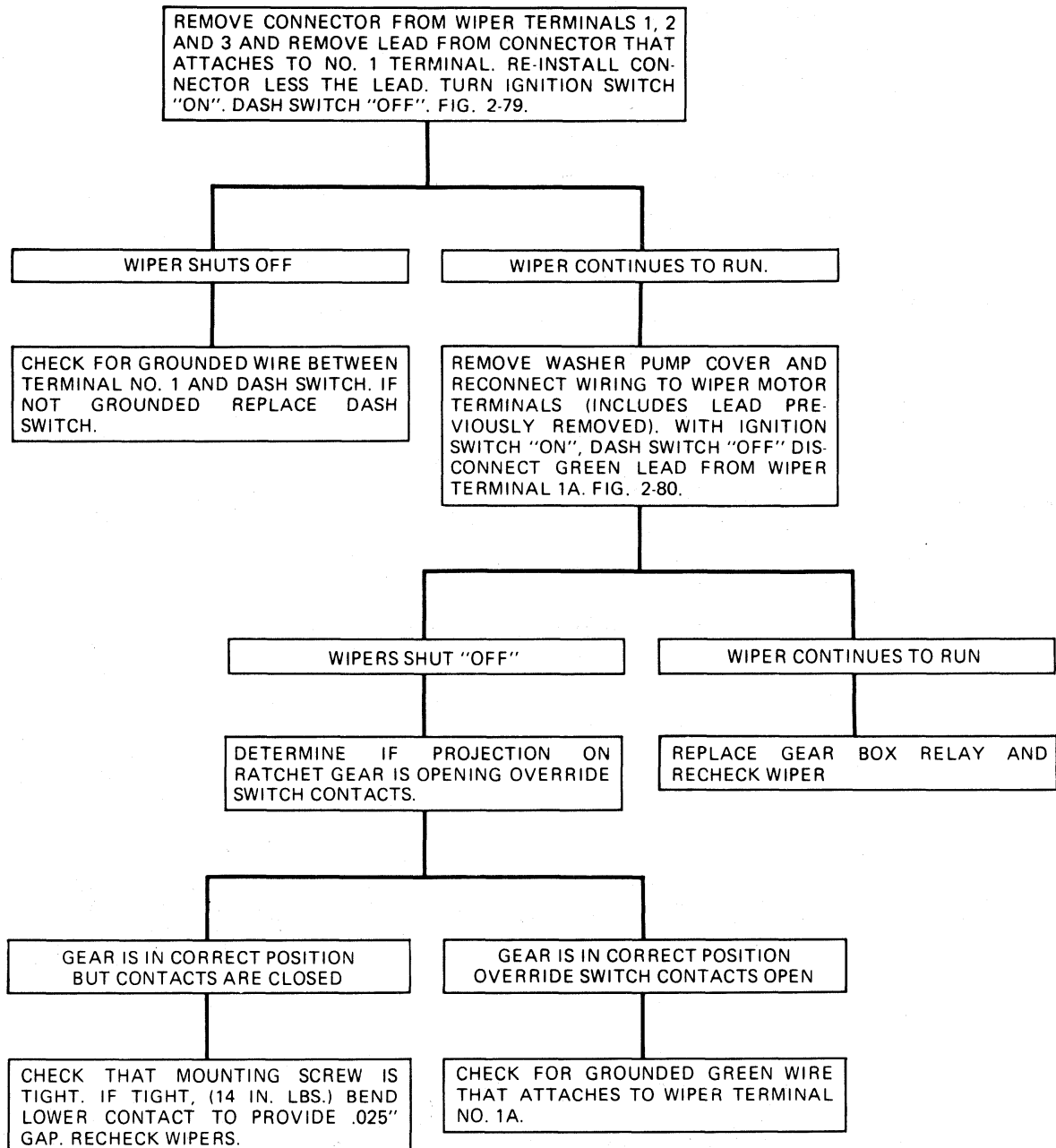
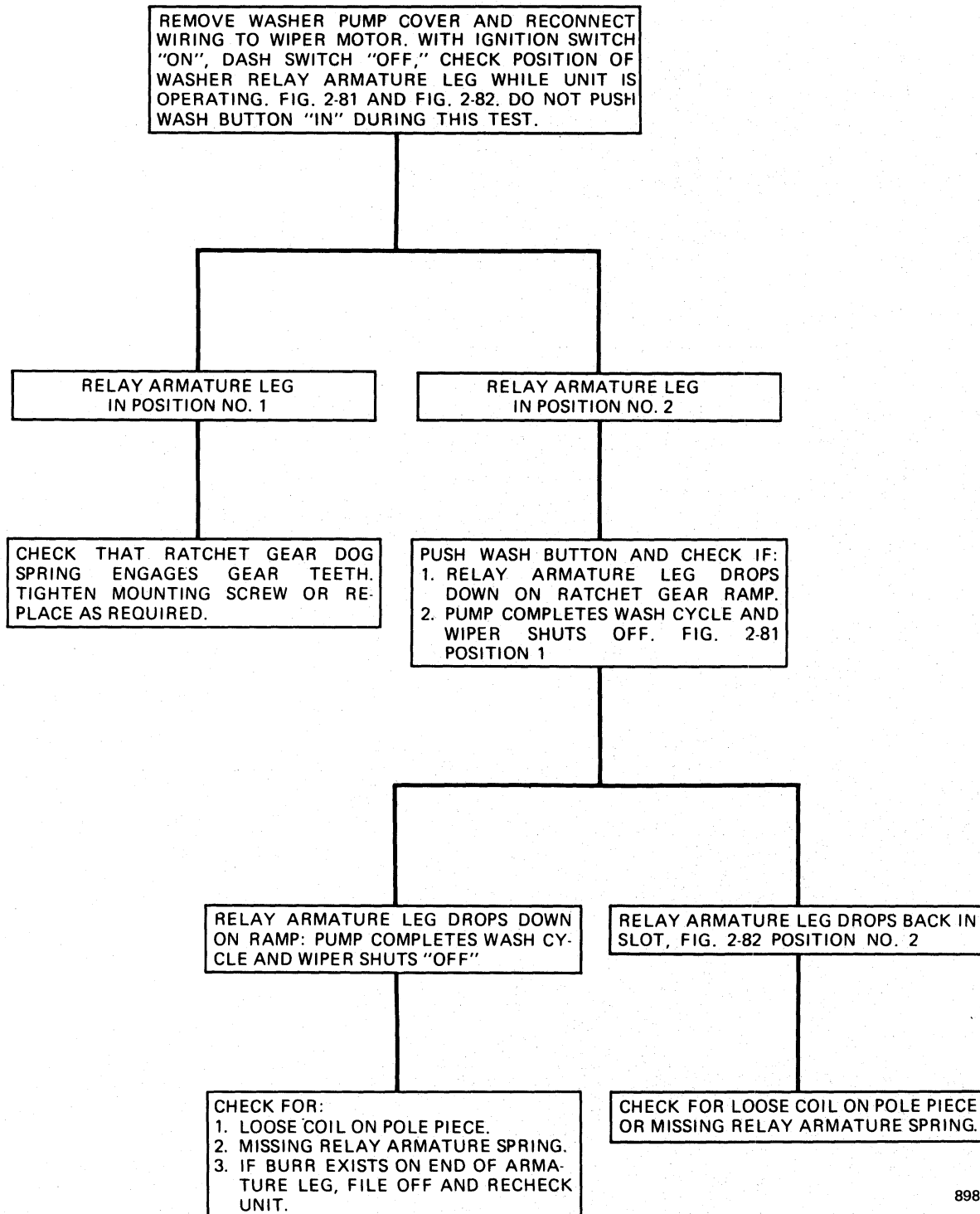


Fig. 2-65-Modified Pulse Wiper Diagnosis Chart - Condition 4

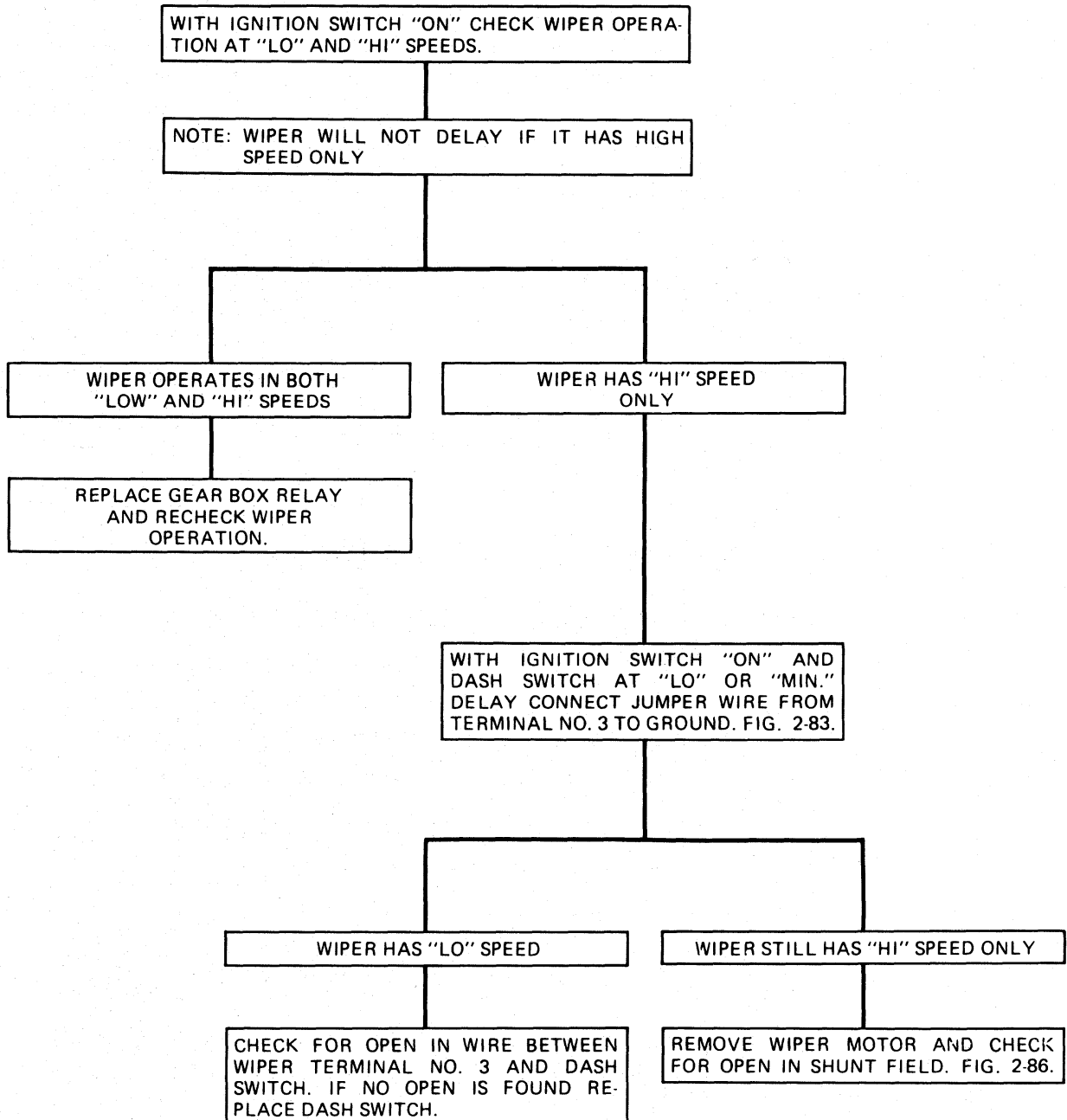
WIPER WON'T SHUT "OFF" AND WASHER PUMP PUMPS CONTINUOUSLY



8981

Fig. 2-66-Modified Pulse Wiper Diagnosis Chart - Condition 5

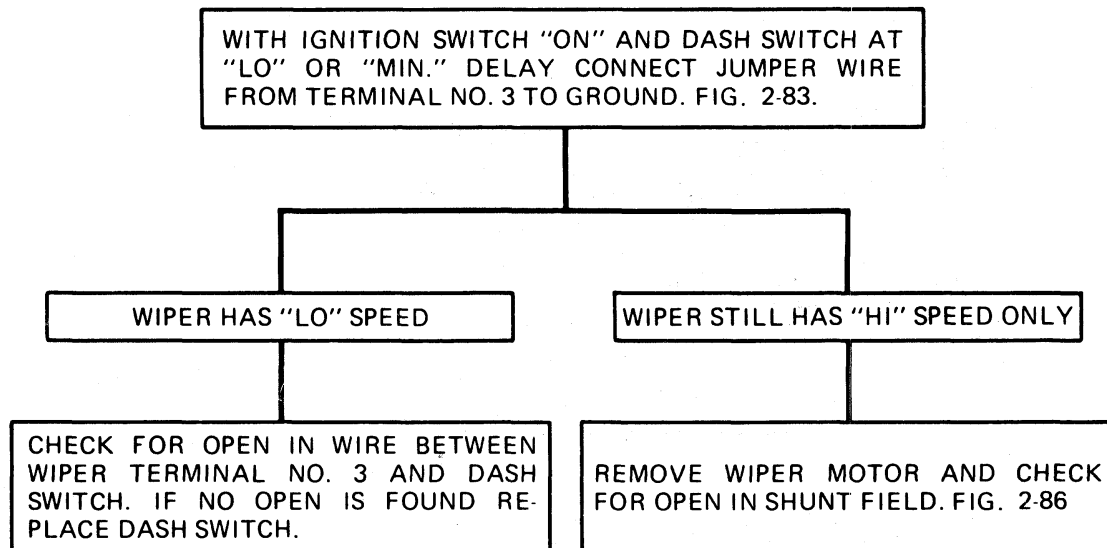
WIPER WILL NOT SHUT OFF BLADES MOVE IN AND OUT OF PARK POSITION



8982

Fig. 2-67-Modified Pulse Wiper Diagnosis Chart - Condition 6

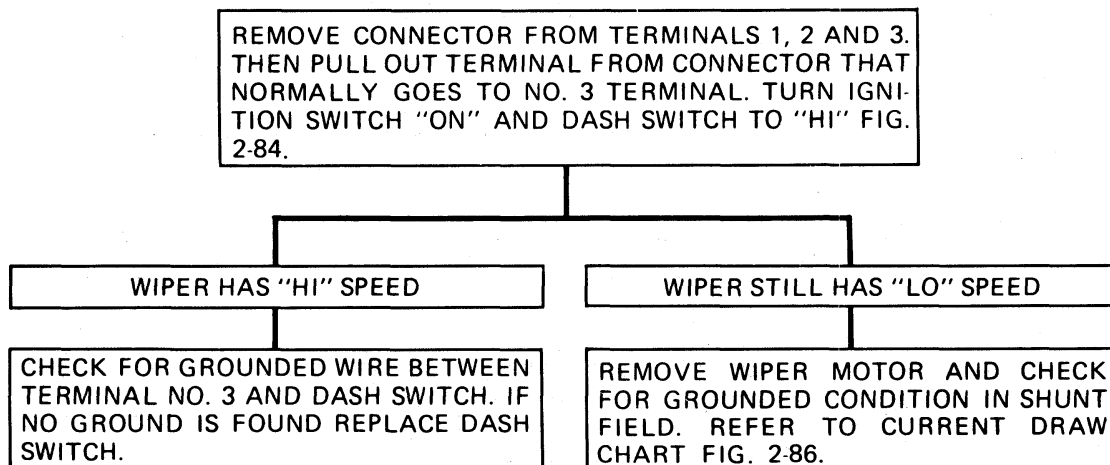
WIPER HAS "HIGH" SPEED ONLY



8983

Fig. 2-68-Modified Pulse Wiper Diagnosis Chart - Condition 7

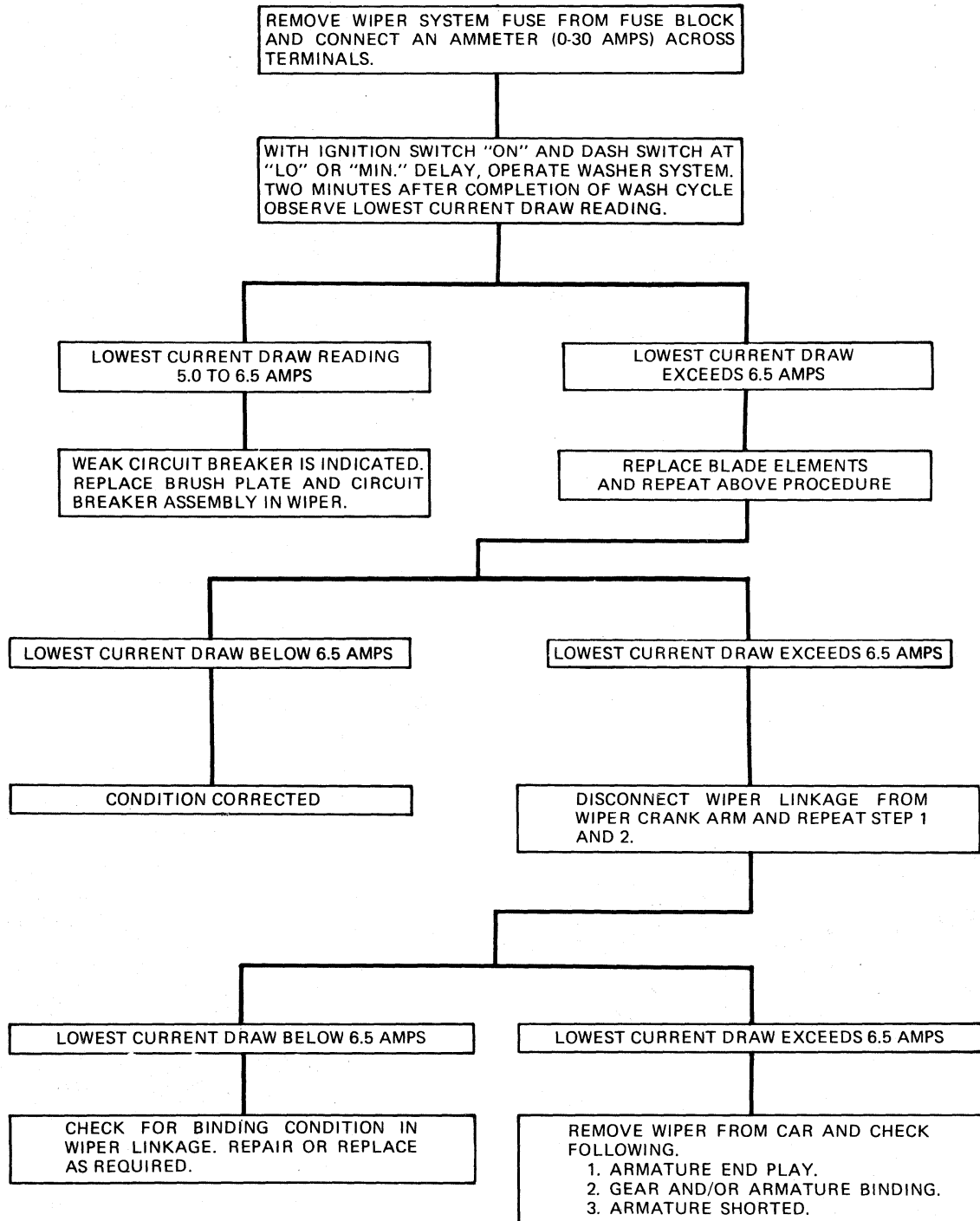
WIPER HAS "LO" SPEED ONLY (OPERATES CORRECTLY IN DELAY MODE AND SHUTS OFF CORRECTLY)



8984

Fig. 2-69-Modified Pulse Wiper Diagnosis Chart - Condition 8

INTERMITTANT WIPER OPERATION BLADES STOP AT RANDOM POSITIONS ON WINDSHIELD



8346

Fig. 2-70-Modified Pulse Wiper Diagnosis Chart - Condition 9

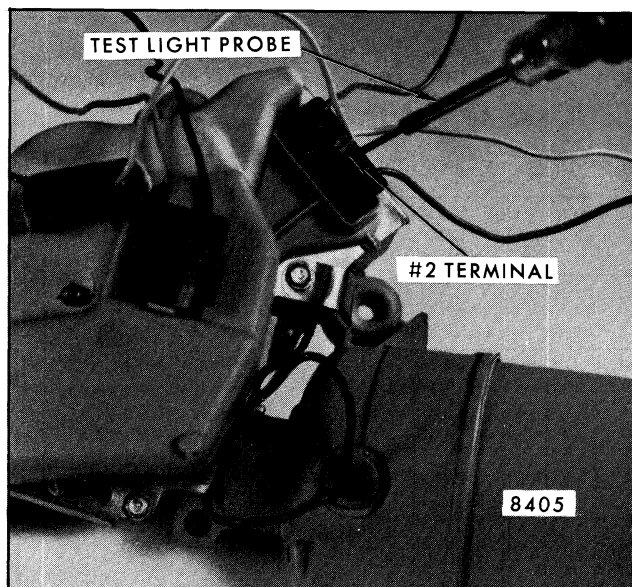


Fig. 2-71-Condition 1 - Step 1

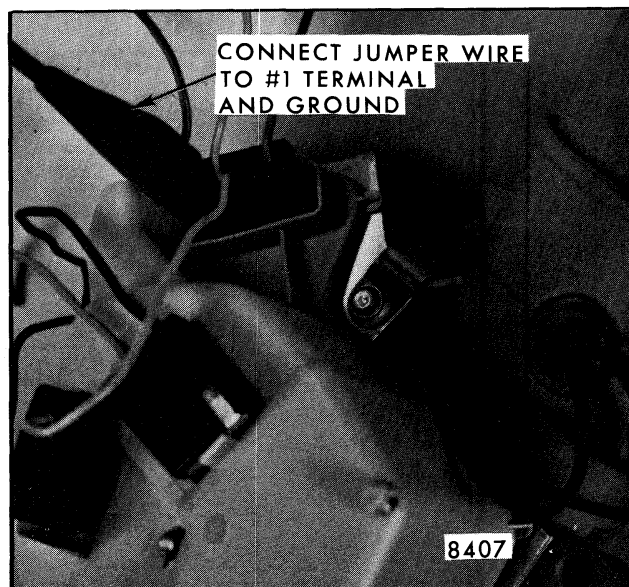


Fig. 2-73-Condition 1 - Step 6

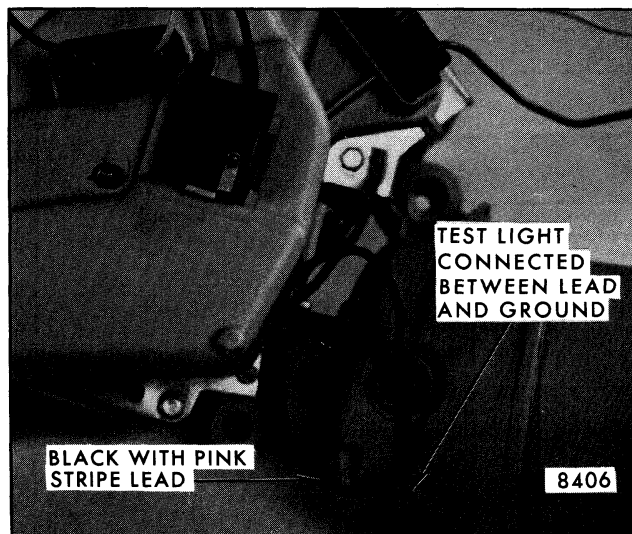


Fig. 2-72-Condition 1 - Step 5

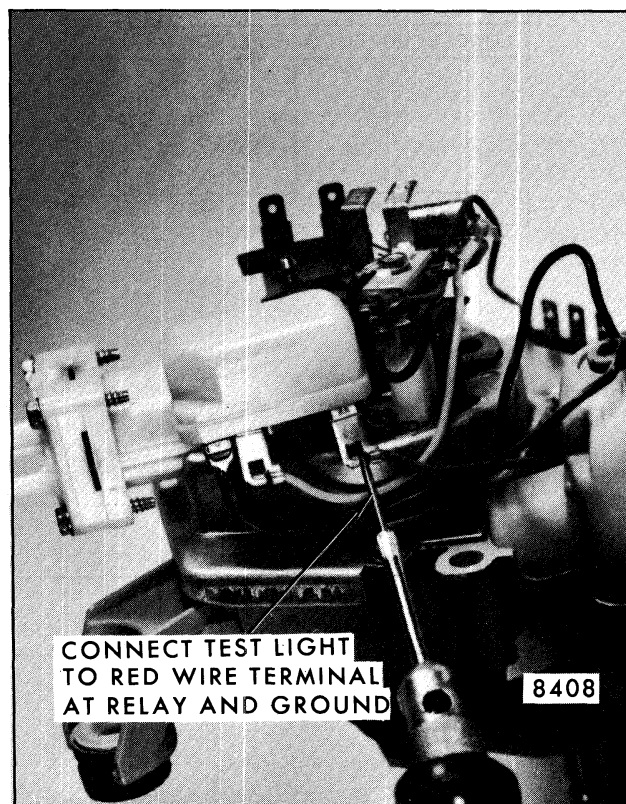


Fig. 2-74-Condition 1 - Step 7

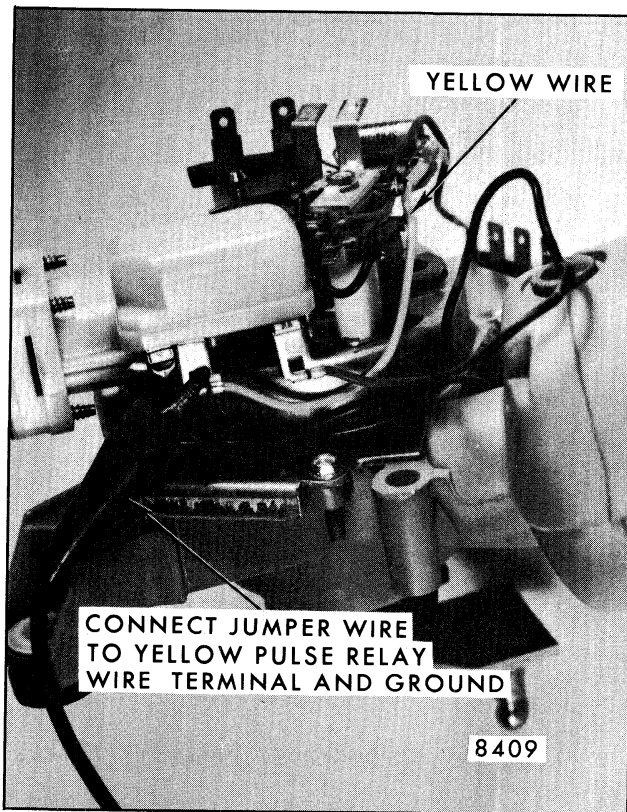


Fig. 2-75-Condition 1 - Step 8

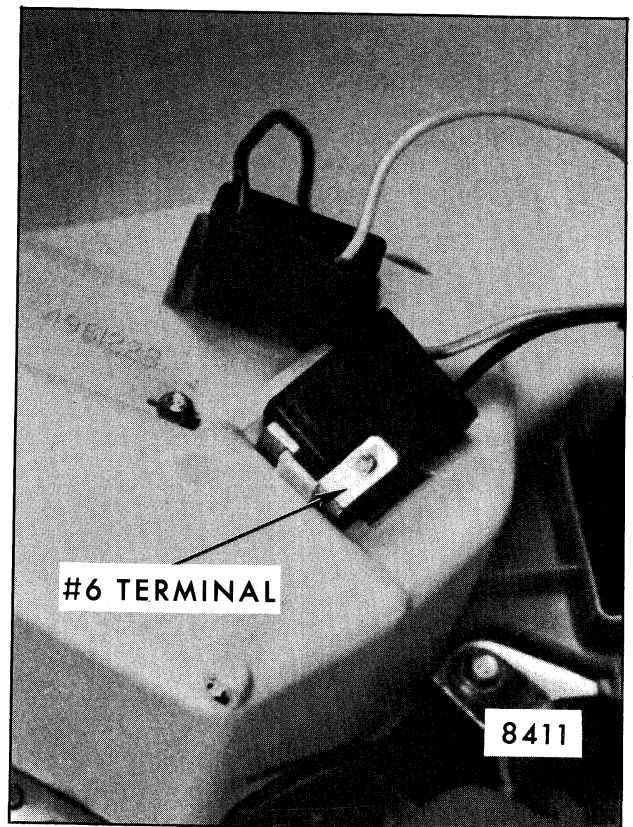


Fig. 2-77-Condition 3 - Step 1

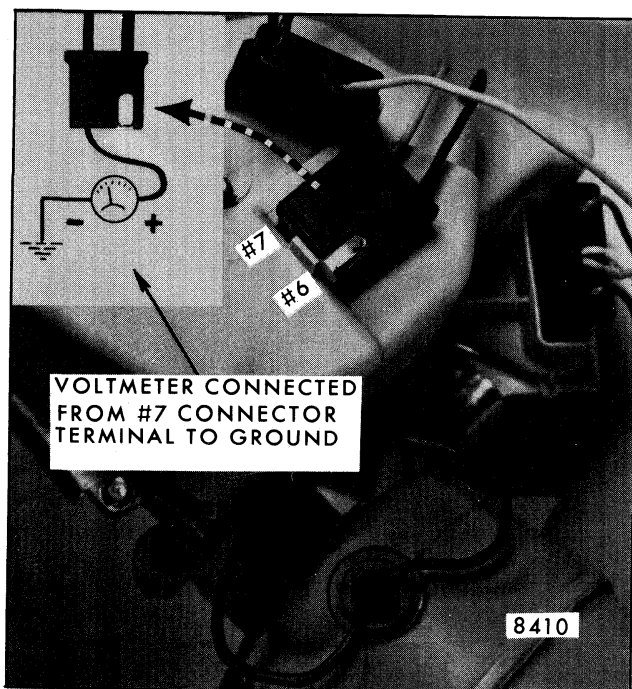


Fig. 2-76-Condition 2 - Step 1

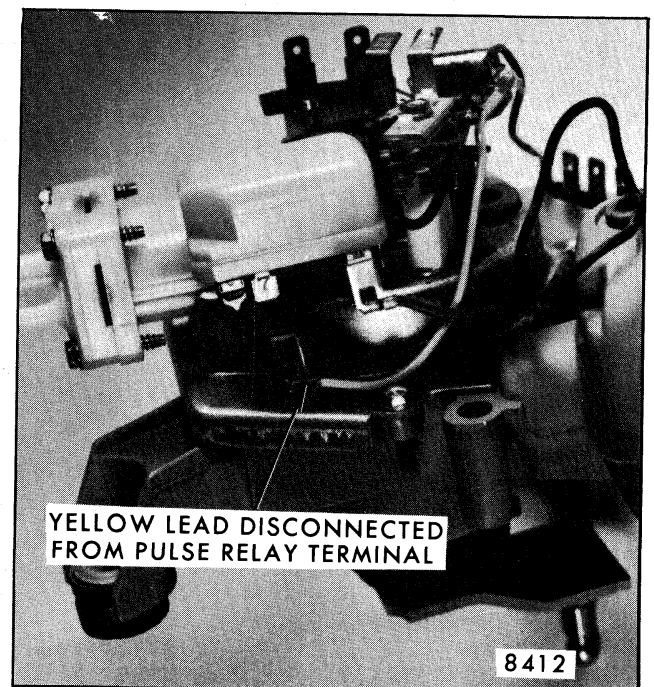


Fig. 2-78-Condition 3 - Step 2

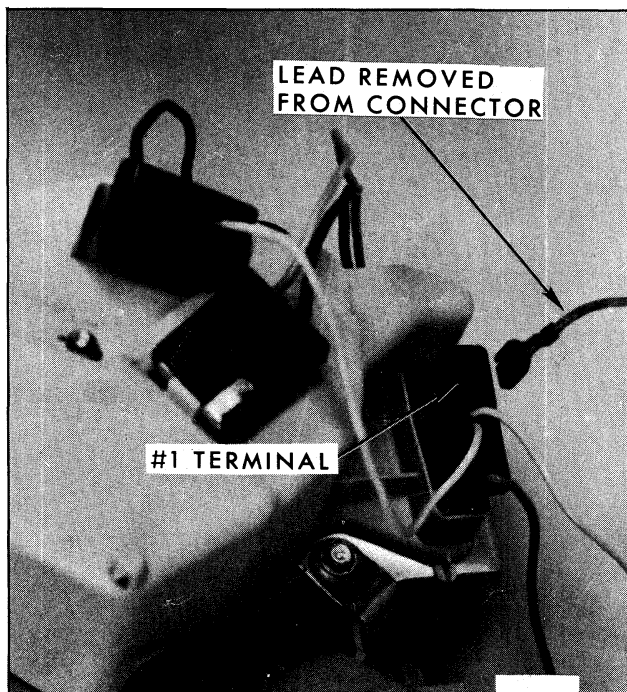


Fig. 2-79-Condition 4 - Step 1

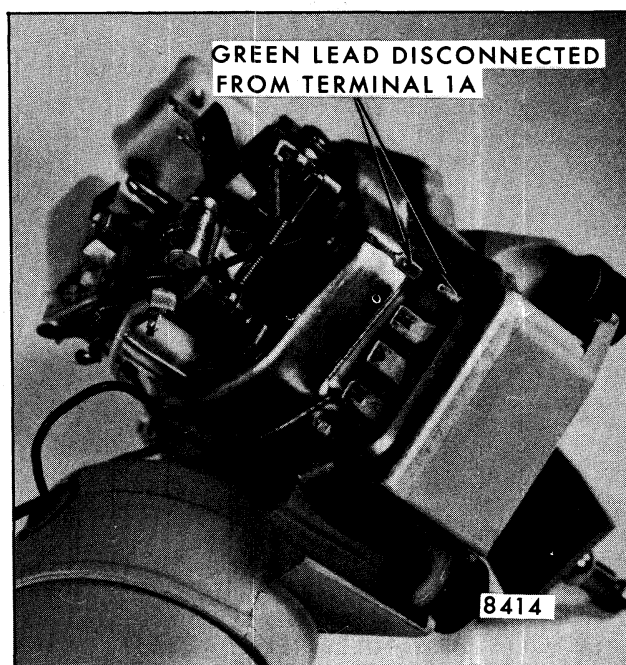


Fig. 2-80-Condition 4 - Step 2

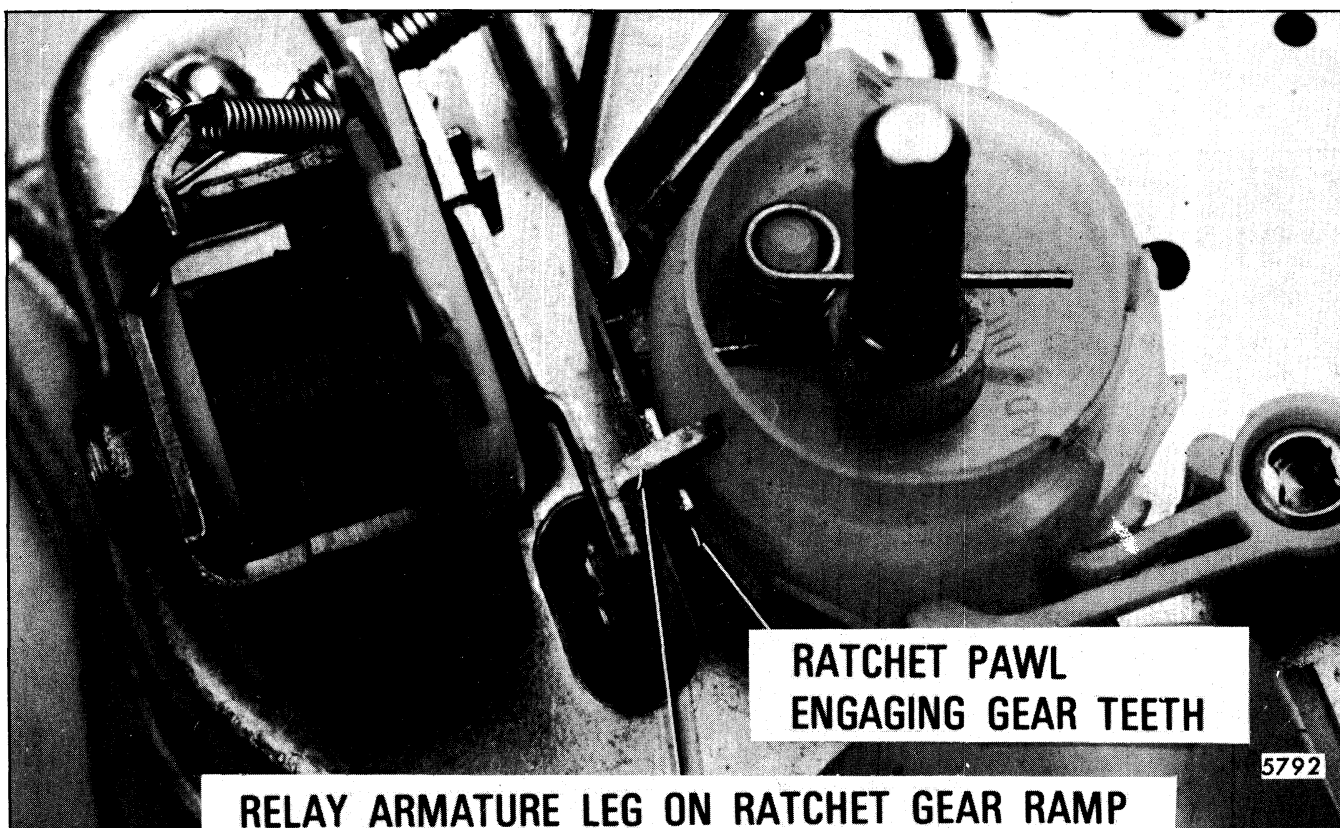


Fig. 2-81-Condition 5 - Step 1 - Position 1

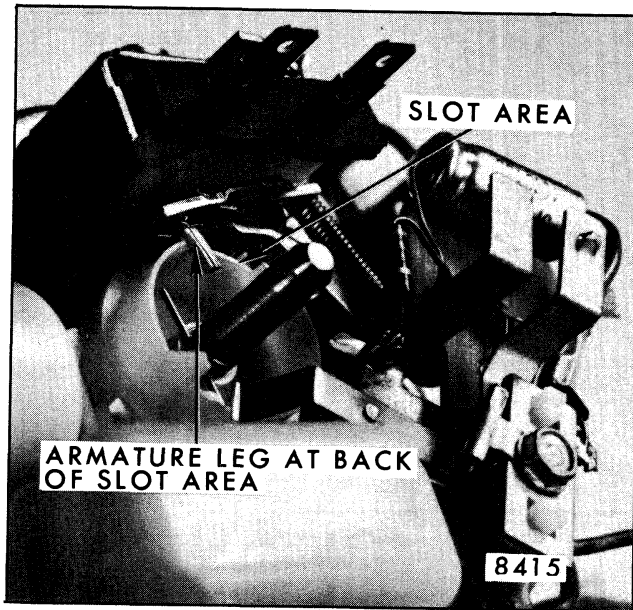


Fig. 2-82-Condition 5 - Step 2 - Position 2

GEARBOX DISASSEMBLY AND ASSEMBLY PROCEDURES

Relay Switch - Terminal Board Assembly

1. Remove washer pump from gearbox, refer to "Washer Disassembly".
2. If wiper gear drive pawl is in full park position (Fig. 2-88), operate the motor as required to move pawl out of relay slot (Fig. 2-85).

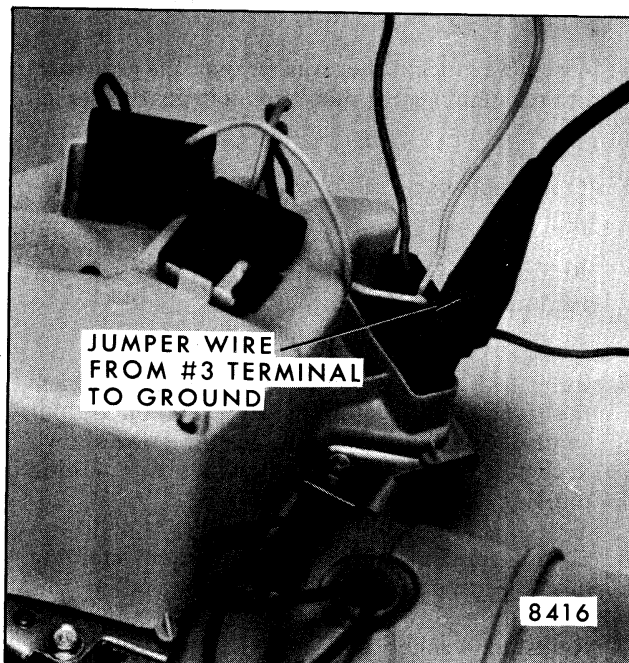


Fig. 2-83-Condition 6 - Step 2

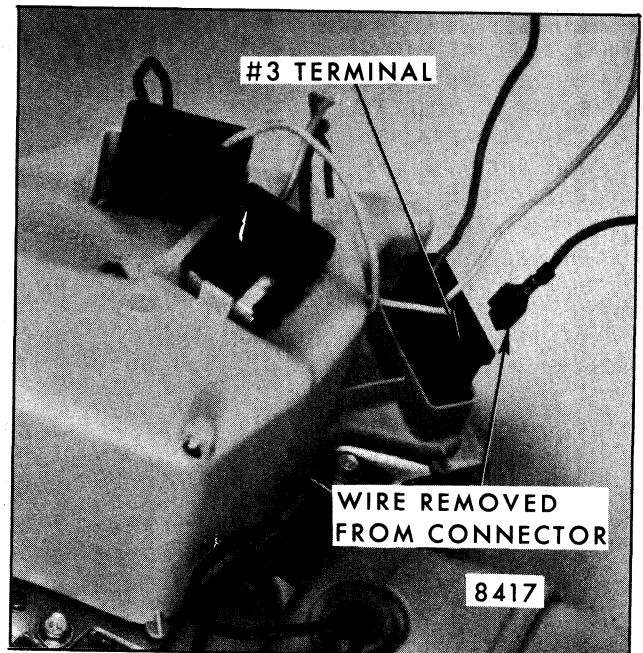


Fig. 2-84-Condition 8 - Step 1

NOTE: If wiper will not run, remove the gear mechanism.

3. If wiper gear drive pawl is not in full park position (Fig. 2-57), remove relay attaching screw (Fig. 2-88) and lift relay-terminal board assembly out of gearbox.
4. Unsolder the black lead from relay terminal. Refer to Figure 2- 89 when resoldering leads.
5. When reassembling relay in gearbox, BE CAREFUL to route leads in such a manner as to avoid having them pinched between relay and casting.
6. Refer to Figure 2-85 and operate wiper to park position, then reinstall washer pump. Refer to reassembly of washer to wiper gearbox (Fig. 2-88).

Drive Gear Disassembly

1. Clamp crank arm in vise and remove crank arm retaining nut, crank arm, rubber seal cap, retaining ring, shim washers, shield and spacer washer in the order indicated (Fig. 2-90).
2. Slide gear assembly out of housing (Fig. 2-91).

NOTE: If relay-terminal board assembly has not been removed, move the relay latch arm out of the way.

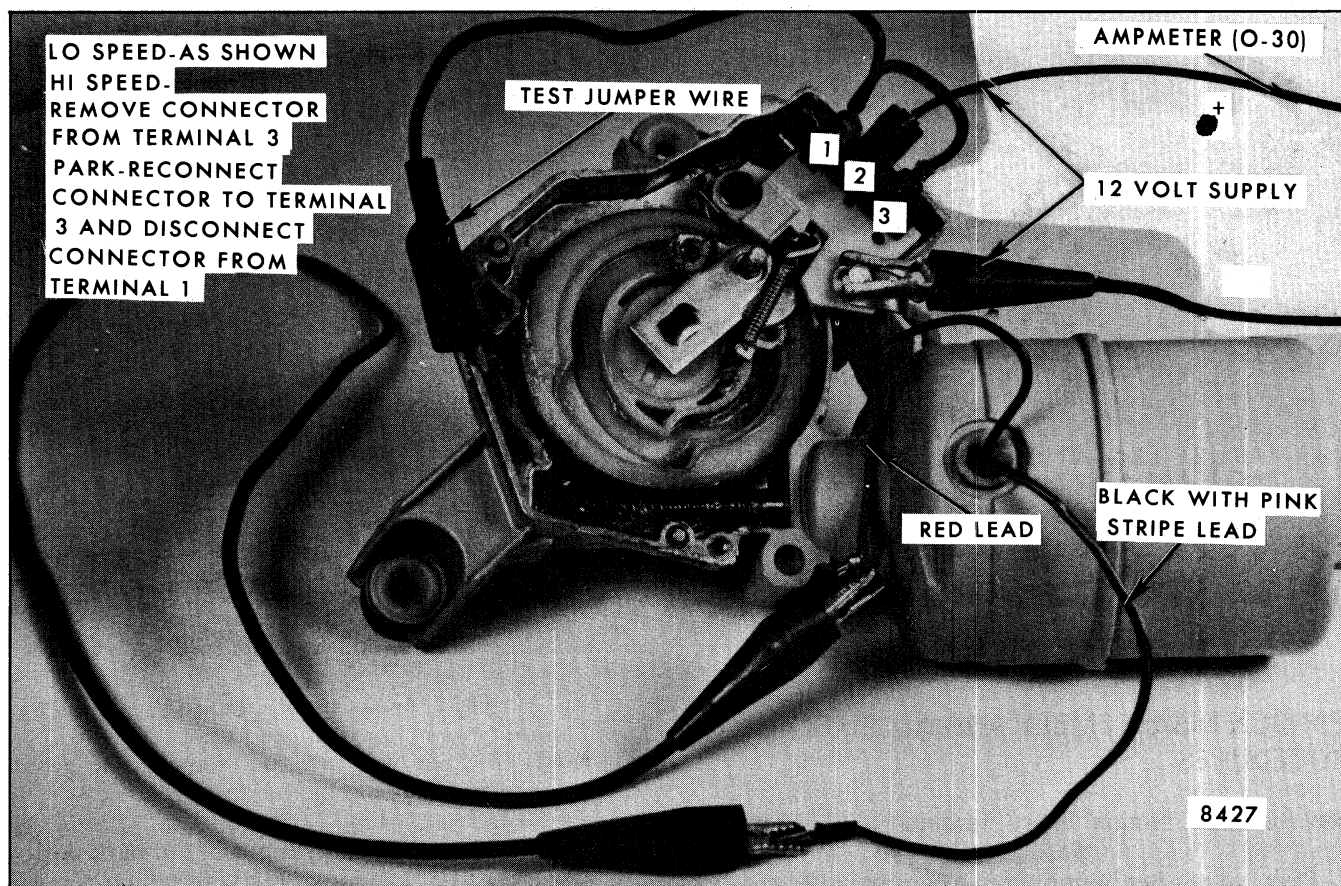


Fig. 2-85-Modified Pulse Motor Bench Operation Test

3. Slide drive plate and shaft out of gear and tube (Fig. 2- 92), and remove the drive pawl, lock pawl and coil spring as required. Save the inside spacer washer for reassembly.

NOTE: The replacement drive plate and shaft assembly is equipped with two retaining ring grooves. The instructions in the package call out which groove to use.

Drive Gear Reassembly

1. Position drive and lock pawls on drive plate as shown in Figure 2-92.
2. Slide gear and tube over the drive plate shaft. Move drive and lock pawls as required to allow their respective pins to fit in the gear guide channel (Fig. 2-92).
3. Holding the gear, manually rotate the drive plate in the direction of the arrow until the drive and lock pawl guide pins fit into the gear pockets (Fig. 2-93).
4. Reinstall pawl spring between lock and drive pawls (Fig. 2- 93).

NOTE: Be careful to maintain the gear mechanism in its assembled position during step 5.

5. Assemble inner spacer washer over the gear tube and reassemble gear mechanism in gearbox (Fig. 2-91).
6. Reassemble parts removed in step 1 under disassembly.

NOTE: Use shim washers as required to obtain a maximum of .004 end play.

7. Refer to Figure 2-85 and operate wiper to park position; then, position crank arm on output shaft flat so that it points in the direction shown in Figure 2-94. Next, install crank arm retaining nut finger tight.
8. Clamp crank arm in vise and torque retaining nut to approximately 300 inch-pounds.
9. Reinstall washer pump to gearbox. Refer to washer pump to wiper gearbox assembly instructions.

INTERPRETATION OF CURRENT DRAW READINGS
LO SPEED OPERATION - NORMAL CURRENT @ 12V - 5-6 AMPS

CONDITION	CURRENT DRAW (AMPS)	INTERPRETATION	REFER TO FIGURE 2-87
Wiper Inoperative	0	Open condition in gearbox relay coil.	
Wiper Inoperative	2.5 - 3.5 Open Armature Circuit	Open armature condition (commutator hooks - broken coil leads). Hung brush. Open splice connections. Circuit breaker contacts open.	(I) (H) (C) (A) (J) (G)
Wiper Inoperative	20 - 25 (Stall Current)	Gear assembly jammed. Armature bound up.	
Wiper Inoperative	30+ Dead short condition	Check for armature thrown winding. Pinched black-pink stripe lead.	(F)
Wiper Operating	7.0+	Armature shorted. Binding condition in motor and/or gearbox.	
Wiper Operating - Won't shut off	5 - 6.0	Gearbox Relay	

9180

Fig. 2-86-Interpretation of Current Draw Readings

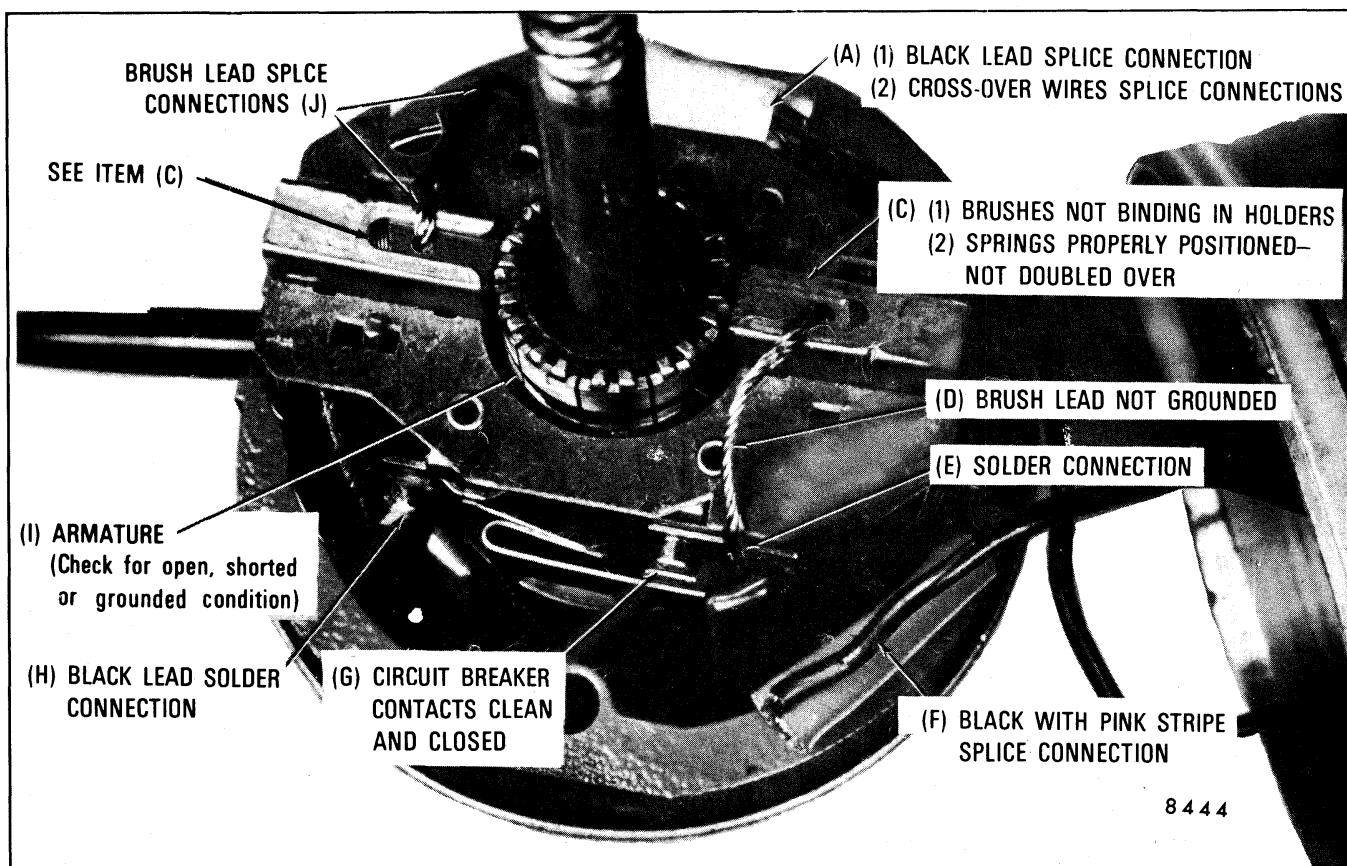


Fig. 2-87-Visual Inspection Modified Pulse Motor

MOTOR DISASSEMBLY AND ASSEMBLY PROCEDURES

Remove washer pump from wiper gearbox. It is not necessary to disassemble the gearbox.

Brush Plate and Circuit Breaker Removal

1. Scribe a reference line along the side of the casting and end cap to insure proper reassembly (Fig. 2-95).

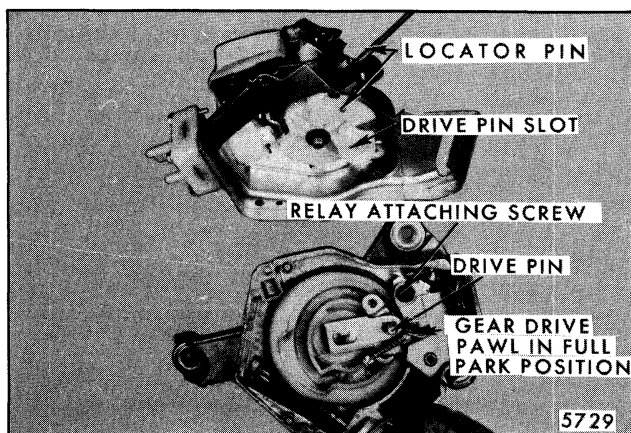


Fig. 2-88-Installing Pump to Motor

2. Remove the two motor tie bolts.
3. Feed exposed excess length of motor leads through the casting grommet and carefully back the case and field assembly plus the armature away from the casting (Fig. 2-95) until the armature shaft clears the casting bearing.

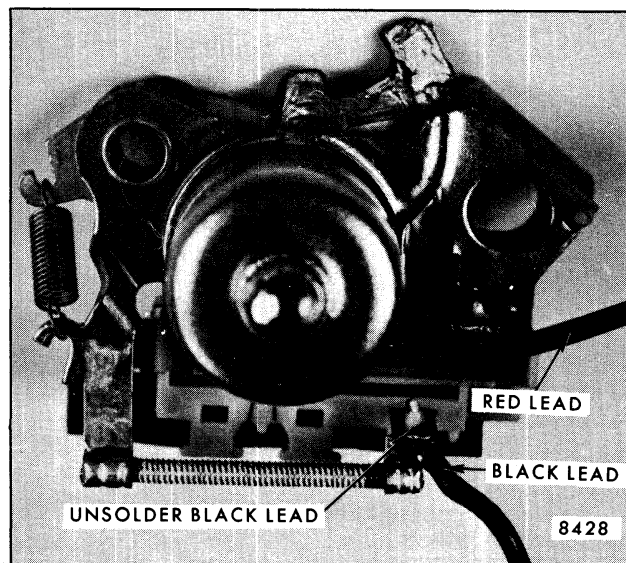


Fig. 2-89-Pulse Relay Terminal

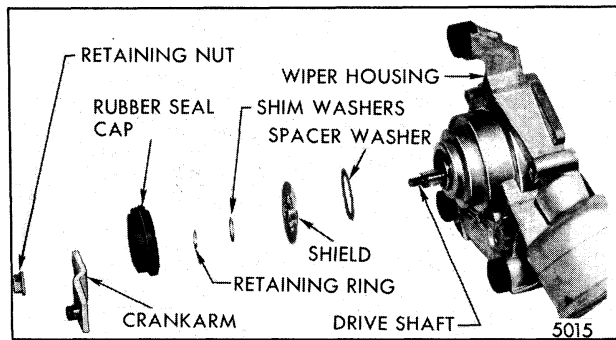


Fig. 2-90-Crank Arm Components

NOTE: If necessary, remove the armature end play adjusting screw and insert a rod through the opening in order to apply pressure against the end of the armature.

4. Carefully note the routing, then unsolder the black lead from circuit breaker (refer to Fig. 2-96).
5. Straighten out the four tabs that secure the brush plate to the field coil bracket (Fig. 2-96).

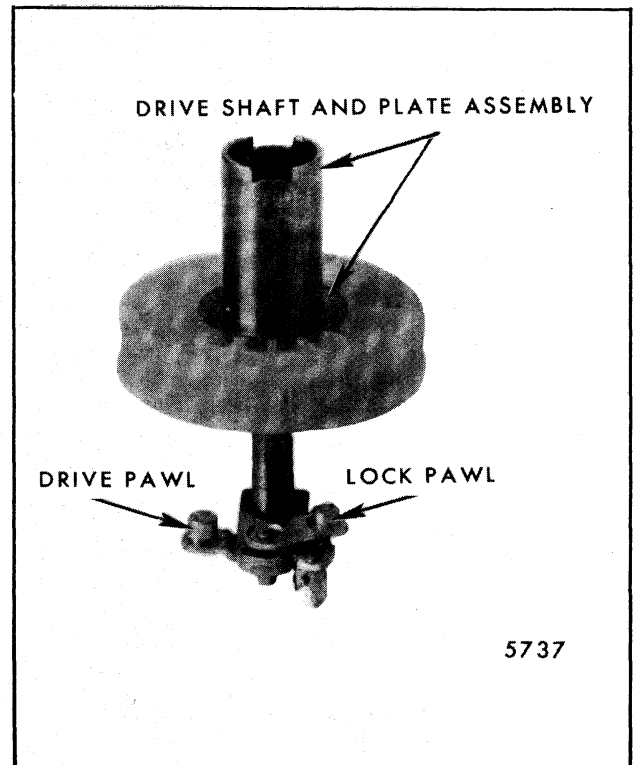


Fig. 2-92-Gear Removed

CAUTION: Be careful not to break any of the retainer tabs.

6. Install 'U' shaped brush retainer clip over brush

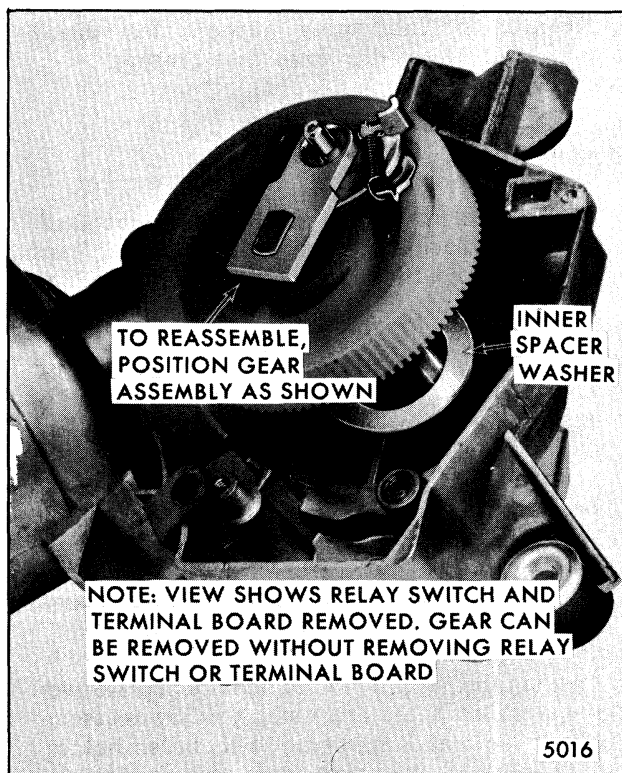


Fig. 2-91-Removing Gear

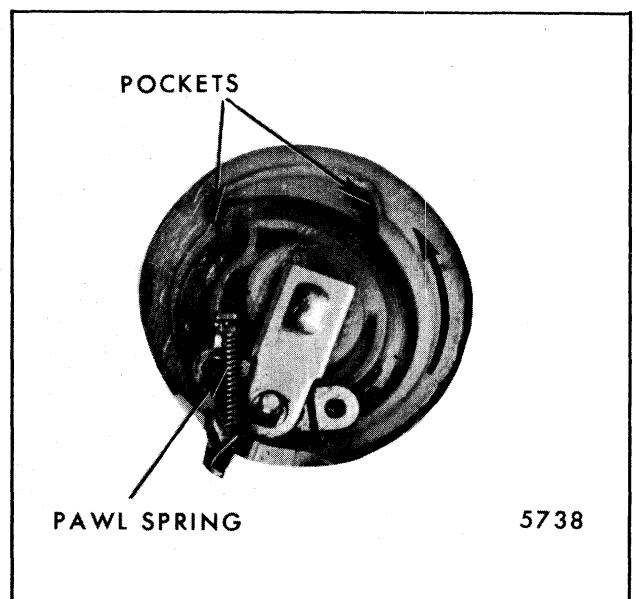


Fig. 2-93-Drive and Lock Pawl Guide Pin Pockets

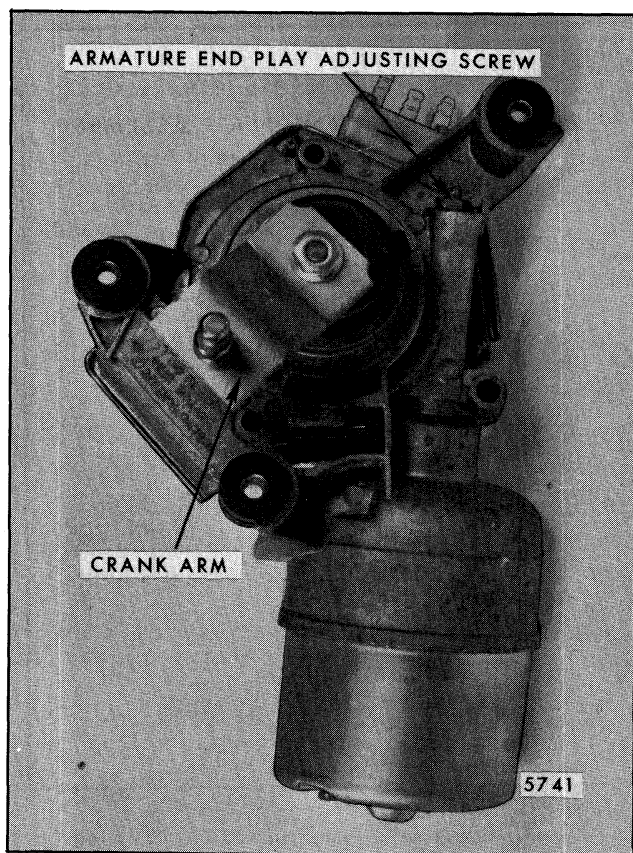


Fig. 2-94-Crank Arm in Park Position

holder that has brush lead attached to circuit breaker (Fig. 2-96).

7. Holding the opposite brush from that retained in step 6, carefully lift the brush holder off the mounting tabs far enough to clear the armature commutator.
8. Allow the brush held in step 7 to move out of its holder. Remove the brush spring and lift the brush holder off the armature shaft. Refer to Motor Reassembly for reinstalling brush plate and circuit breaker assembly (steps 5, 6, 7 and 9 through 12).

Armature Removal

1. Follow steps 1 through 8 under brush plate removal.
2. Lift armature out of case and field assembly.
3. Remove thrust ball from end of armature shaft to save for reassembly.

NOTE: Thrust ball may be easily removed with a magnet.



Fig. 2-95-Motor Case Alignment Marks

4. To reassemble armature, follow steps 3 through 10 under motor reassembly.

Case and Field Assembly Removal

1. Remove brush plate and armature.
2. The end case and field assembly is serviced as a unit. To free the field and case assembly, cut the solid black and black with pink stripe leads in a location convenient for splicing.
3. Remove felt lubricating washer, steel thrust plate and rubber disc from case bearing.

Motor Reassembly

1. If new field and case assembly is being installed, splice the black and black with pink stripe leads of the new field with the corresponding leads to the wiper.
2. Install the rubber thrust disc, steel thrust disc and felt lubricating washer in the case assembly bearing in the order indicated.
3. Lubricate end of armature shaft that fits in case bearing with recommended type grease (Fig. 2-97). Next, install thrust ball in end of shaft.
4. Assemble armature in the case and field assembly.
5. Position the partially assembled brush plate over the armature shaft far enough to allow reassembly of the remaining brush in its brush holder; then, position the brush plate assembly on the mounting tabs in the position shown in Figure 2-96.

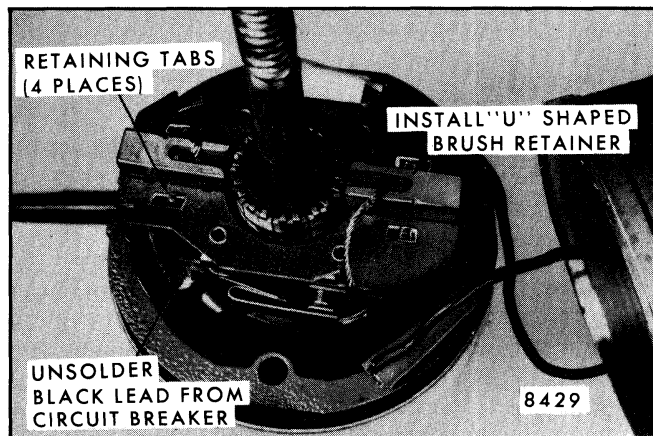


Fig. 2-96-Brushes and Brush Plate

6. Center the brush plate mounting holes over the mounting tabs and bend the tabs toward the brush holders as required to secure the brush plate in position. Be careful not to bend or distort the metal brush holders.

NOTE: Be sure tabs are centered in brush plate mounting holes.

7. Remove brush retainer clips and resolder circuit breaker ground lead to circuit breaker.
8. If new case and field assembly is used, scribe a line on it in the same location as the one scribed on the old case. This will insure proper alignment of the new case with the scribed line made on the housing.
9. Position armature worm shaft inside the housing and using the scribed reference marks line up as near as possible the case and field assembly with the housing.
10. Maintaining the armature in its assembled position, start the armature shaft through the housing bearing until it starts to mesh with drive gear teeth. At the same time carefully pull the excess

SPECIFICATION CHART

Operating Voltage 12 Volts D.C.

Bench Check (No Load) Current Draw (AMPS) Crankarm Speed

"A-B-C-D-E"

"Lo" Speed 6.0 Max. 35-50
 "Hi" Speed 4.5 Max. 70-90

Stall (Cold Motor)

"Lo" Speed ..29.0 Max. 0

Torque Inch Pounds

Washer Pump Mounting Screws 18
 Armature Adjusting Screw Jam Nut 50
 Motor Tie Bolts 30
 Gear Box Relay Attaching Screw 30
 Motor Crankarm Attaching Nut
 5/16 x 24 Thread 300-350
 Motor Crankarm to Transmission Drive Link 25-35
 Motor to Body Attaching Bolts 30-45
 Transmission to Body Attaching Bolts 48-72

Lubrication

Gear Teeth
 Gear Shaft
 Gear Camtrack
 Seal Cap (Inside)
 Armature Shaft
 Armature Worm

Multifak EP-1
 or Equivalent

5742

Fig. 2-97-Specification Chart - Pulse Wiper

lead lengths through the casting grommet.

NOTE: If necessary, rotate the armature slightly so that the armature worm will engage with drive gear teeth.

11. Rotate case as required to align the bolt holes in the end case with those in the housing.
12. Secure the case to the housing with the two tie bolts. Adjust armature end play as required.

WASHER SYSTEMS

DESCRIPTION

The washer pump used on all round motor systems is a positive displacement type pump employing a small piston, spring and valve arrangement. The plastic valve assembly is identical, however the programming (starting and completion of wash cycle) which is accomplished electrically and mechanically by a relay assembly and ratchet wheel arrangement differs and will be explained separately.

The washer system on "F, H and X" styles consists of a permanent magnet motor and pump assembly that is mounted to the bottom of the washer solution jar with a retaining nut and screen assembly. The motor and pump assembly is common to the three different shaped jars used on "F, H and X" styles. It is serviced as a complete assembly including the gasket and retaining nut and screen (Fig. 2-98). The washer solution jar is serviced separately.

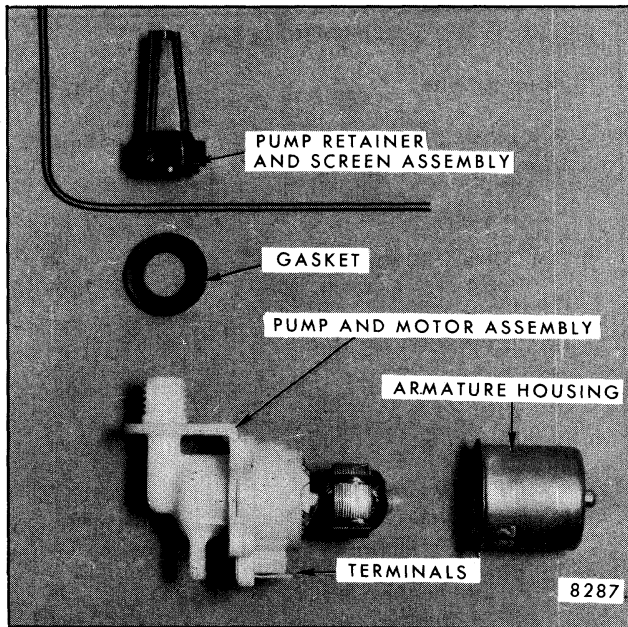


Fig. 2-98-Jar Mounted Motor and Pump Assembly

JAR MOUNTED SYSTEM

Description

Pushing the wash button "in" completes the washer motor circuit to ground and turns the washer motor "on" causing the pump and wipers to operate (Fig. 2-100).

The washer pump will operate only while the wash button is held "in" allowing direct control of the amount of solution delivered to the windshield. It is shut "off" as soon as the wash button is released. The wipers will continue to operate until the dash mounted control switch is pushed to the "off" position.

Removal and Installation

1. Remove two solution jar to body attaching screws.
2. Disconnect electrical wiring and hose.
3. Note installed position of motor and pump assembly in relation to bottom of jar (Fig. 2-99).

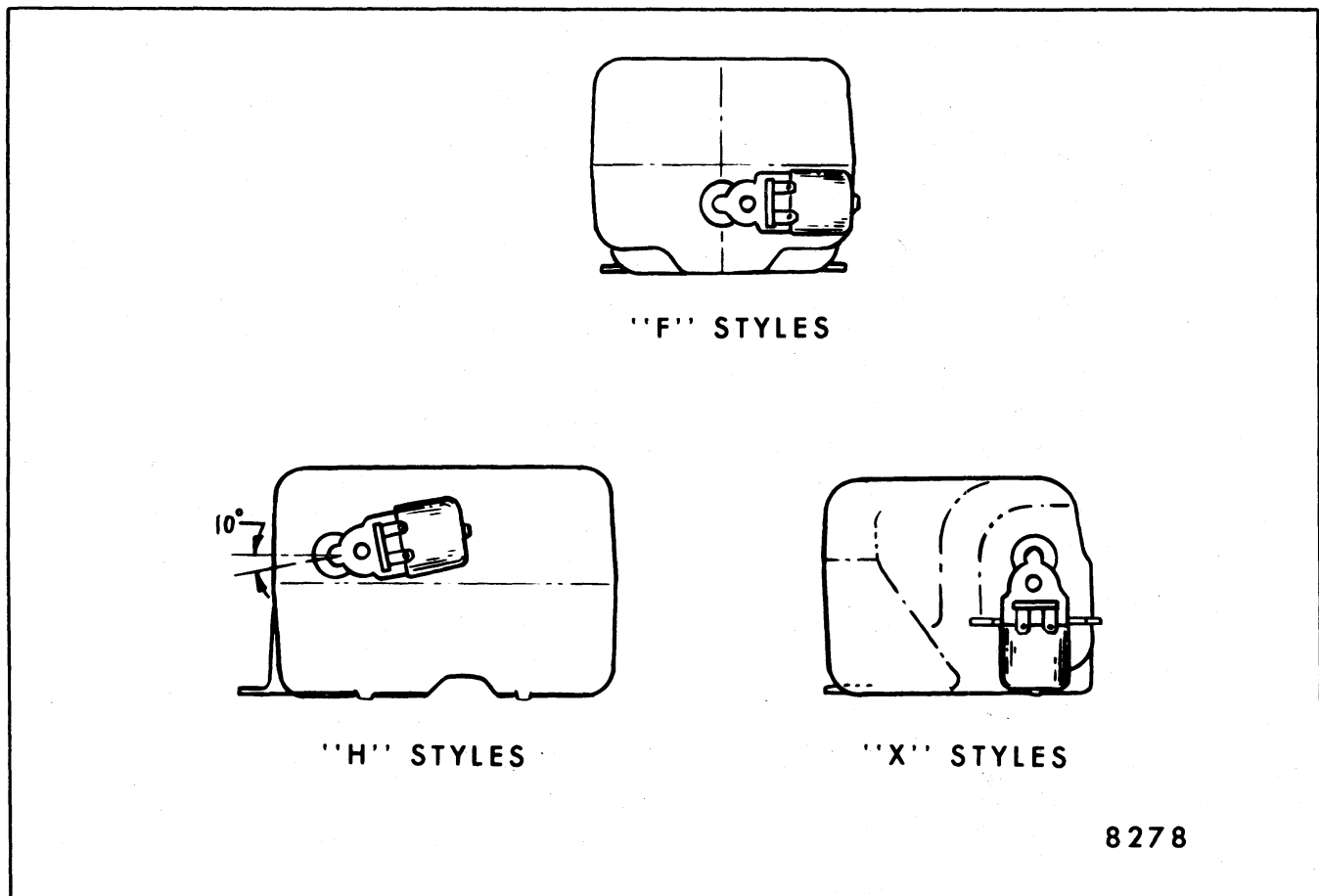


Fig. 2-99-Motor and Pump Assembly Positioning to Jar

DIAGNOSIS PROCEDURE - JAR MOUNTED WINDSHIELD WASHER PUMP SYSTEM -

WASHER PUMP INOPERATIVE

NOTE: To insure proper operation of pump be sure adequate amount of solution is maintained in washer jar.

TEST	TEST RESULT	CORRECTION
1. Check for voltage at washer pump terminal. (Ignition switch "on") Fig. 2-101	A. No voltage at terminal B. Voltage present	A. Check for open in B plus wire (black with yellow stripe) or blown fuse B. Proceed to Test 2
2. With ignition "on" connect jumper wire from dash switch motor terminal to ground (Fig. 2-100)	A. Motor operates B. Motor inoperative	A. Check for open in dark blue wire between motor and dash switch. If no open can be found replace dash switch B. Replace motor and pump assembly

DIAGNOSIS PROCEDURE - JAR MOUNTED WINDSHIELD WASHER PUMP SYSTEM -

WASHER PUMP OPERATES BUT PRESSURE IS WEAK

NOTE: To insure proper operation of pump be sure adequate amount of solution is maintained in washer jar.

TEST	TEST RESULT	CORRECTION
1. Check hoses for kinks, cracks or loose fit at nozzles, washer pump and "T" connection. Insure that nozzles and screen are clean.	A. Hoses damaged or loose, nozzles or screen dirty B. Hoses, screen and nozzles okay	A. Make necessary repairs B. Proceed to Test 2

DIAGNOSIS PROCEDURE - JAR MOUNTED WINDSHIELD WASHER PUMP SYSTEM -

WASHER PUMP OPERATES BUT PRESSURE IS WEAK

TEST	TEST RESULT	CORRECTION
2. Remove wiring connector from motor and check that B plus lead (black with yellow stripe) and dash switch lead (dark blue) are not reversed in connector.	<p>A. B plus and switch leads reversed</p> <p>B. B plus and switch leads not reversed</p>	<p>A. Install leads correctly and recheck operation of pump</p> <p>B. If nozzle adjustment is correct replace motor and pump assembly</p>

DIAGNOSIS PROCEDURE - JAR MOUNTED WINDSHIELD WASHER PUMP SYSTEM -

WASHER PUMP RUNS BUT NO SOLUTION IS DELIVERED FROM NOZZLE

NOTE: To insure proper operation of pump be sure adequate amount of solution is maintained in washer jar.

TEST	TEST RESULT	CORRECTION
1. Repeat Test 1 under Diagnosis Chart (Washer Pump Operates But Pressure Is Weak)	A. No discrepancies found	A. Replace motor and pump assembly

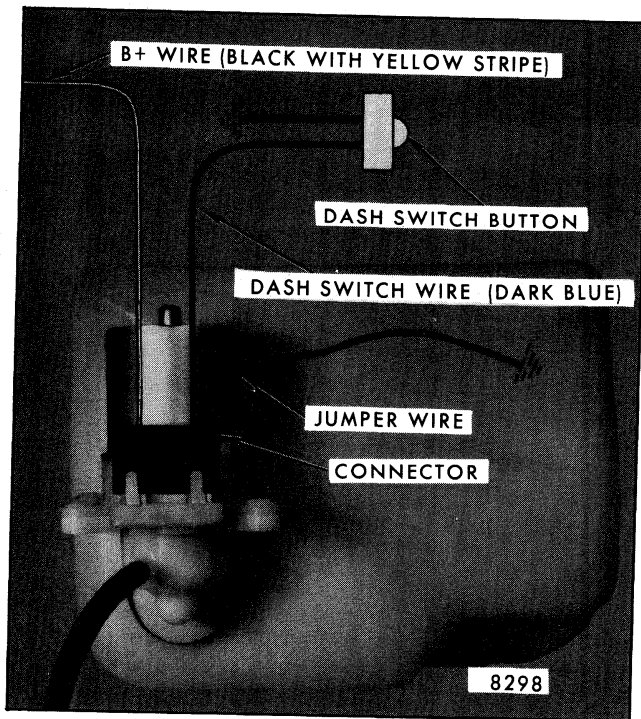


Fig. 2-100-Jumper Wire from Dash Switch Motor Terminal to Ground

4. Grasp motor and pump assembly and remove retaining nut and screen assembly using a 3/8" drive ratchet wrench, 6" extension, universal joint and 15/16" deep socket.
5. To install, reverse removal procedure. Torque retaining nut and screen assembly to 15 to 30 inch-pounds.

ROUND MOTOR WASHER SYSTEM

Description

The basic pumping mechanism consists of a spring-loaded piston assembly enclosed in a plastic cylinder. Attached to the piston and extending out of the cylinder housing is an actuator plate. A valve assembly consisting of two exhaust valves and one intake valve is attached to the opposite end of the cylinder housing and controls the flow of washer solution.

Referring to Figure 2-102, note that the elongated slot of the piston actuator plate fits over a pin. This pin is a part of a cam-follower assembly which is actuated by the 4-lobe cam located on the underside of the pump mounting plate. When the wiper is running, the drive gear rotates the 4-lobe cam which in turn causes the cam-follower to move back and forth.

When the cam-follower moves in the direction indicated by the arrow in Figure 2-102, the cam-fol-

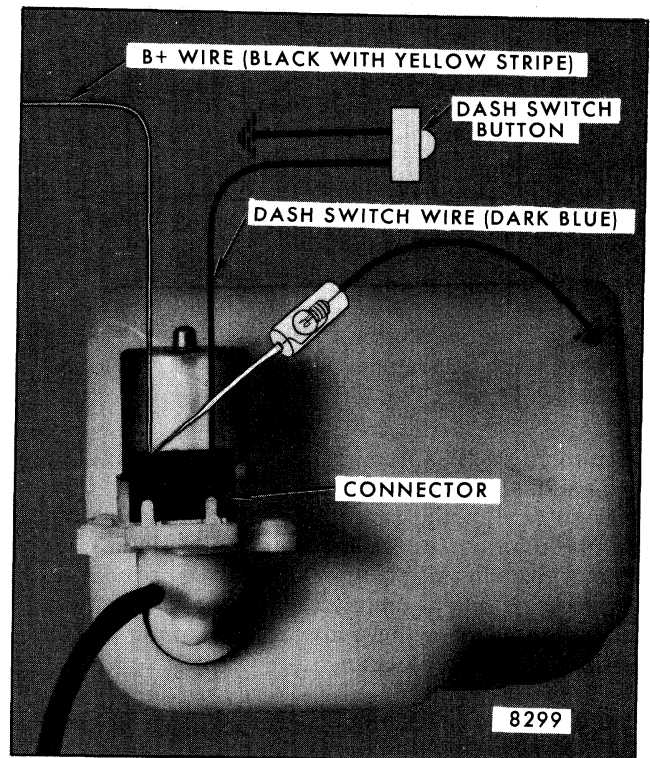


Fig. 2-101-Voltage Check at B Plus Motor Terminal

lower pin, which extends through the piston actuator plate, pulls the actuator plate away from the valve assembly compressing the piston spring. As the piston moves away from the valve assembly, a vacuum is created in the cylinder which opens the intake valve, drawing washer solution into the cylinder (Fig. 2-119).

As the 4-lobe cam continues to rotate, the cam-follower pin moves in the opposite direction described in the intake stroke. This permits the piston spring to expand which in turn pushes the piston toward the valve assembly creating pressure between the piston

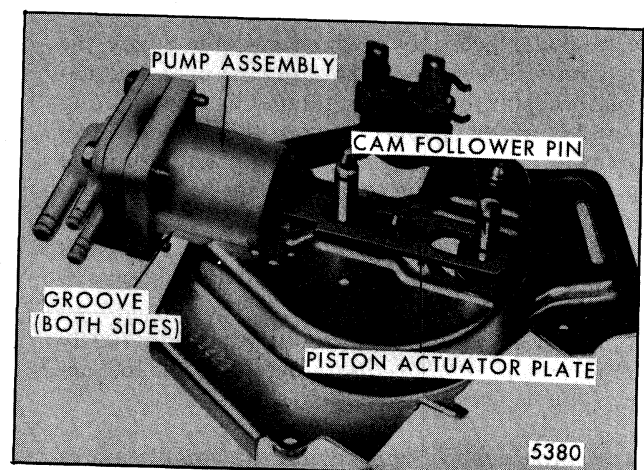


Fig. 2-102-Pump Intake Stroke

and valve assembly. This pressure "build-up" forces the washer solution out the two exhaust valves to the nozzles (Fig. 2- 119).

NOTE: For purposes of explanation, only one exhaust valve opening is shown.

The intake and exhaust stroke cycle will occur four times for each revolution of the wiper drive gear while the washer pump is operating.

The programming section of the pump mechanism consists of a relay, ratchet pawl, ratchet wheel, and ratchet wheel dog (Fig. 2-103).

Refer to Figure 2-104 and note that a tang on the piston actuator plate is resting against a ramp on the lower surface of the ratchet wheel. This holds the piston actuator plate in a lock- out position. With actuator plate in this position and the wiper running, the cam-follower pin merely moves back and forth in the elongated slot of the piston actuator plate and no pumping action can occur.

The ratchet wheel, which, if rotated, would move the ramp away from the tang of the actuator plate releasing the pump action, is prevented from rotating as follows:

The relay assembly, consisting of a coil and armature, is constructed in such a way that the ratchet wheel pawl extends through an opening in the relay armature, preventing it from engaging the ratchet wheel teeth.

Actuating the washer button to obtain windshield washer pump operation starts the wiper motor and energizes the pump relay. When relay is energized, the relay armature is pulled suddenly toward the coil, allowing the ratchet wheel pawl to drop out of the relay armature opening and engage the teeth of the ratchet wheel.

The ratchet wheel pawl, which is actuated by the same cam-follower pin that moves the piston actuator plate, begins to rotate the ratchet wheel. Rotating the ratchet wheel one tooth moves the ratchet wheel ramp away from the tang of the piston actuator plate (Fig. 2-104), permitting the piston spring to expand which in turn forces the piston toward the valve assembly resulting in the first exhaust stroke. This sequence then repeats through the remaining cycles.

The pumping operation is terminated automatically when the ratchet wheel has rotated a full 360 degrees. This is accomplished as follows:

As the ratchet wheel approaches the completion of its 360 degrees travel, two functions occur simultaneously:

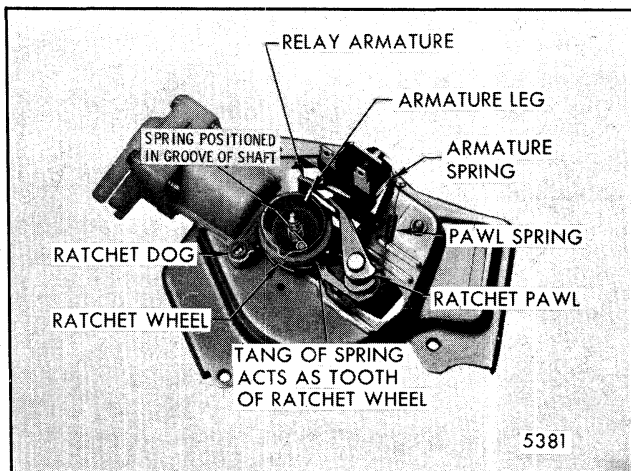


Fig. 2-103-Pump Mechanism

1. A leg on the relay armature rides up a ramp located on the outer surface of the ratchet wheel. When the leg reaches the top of the ramp, it moves over the top edge of the ratchet wheel. This action allows the ratchet wheel pawl to re-enter the armature opening preventing further rotation of the ratchet wheel until the next time the relay coil is energized from the washer button. (Refer to Fig. 2-103 for position of armature leg while pump is idling.)
2. The tang on the piston actuator plate is resting once more against the ramp on the lower side of the ratchet wheel (Fig. 2- 104).

REMOVAL OF WASHER PUMP FROM WIPER MOTOR

1. Remove washer hoses from pump.

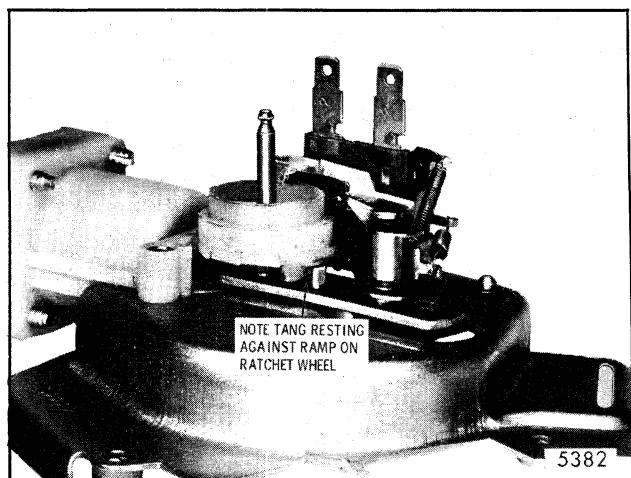


Fig. 2-104-Ratchet Wheel-Ramp

DIAGNOSIS CHART - ROUND MOTOR WASHER SYSTEM

CONDITION	APPARENT CAUSE	CORRECTION
1. Washers inoperative	<p>A. Inadequate quantity of washer solution</p> <p>B. Hoses damaged, loose, and/or kinked</p> <p>C. Plugged screen at end of jar cover hose</p> <p>D. Loose electrical connection to washer pump or wiper switch</p> <p>E. Open circuit in feed wire to ratchet relay coil</p> <p>F. Wiper switch defective</p> <p>G. Ratchet relay coil defective</p> <p>H. Washer nozzles plugged</p> <p>I. Ratchet wheel tooth missing</p> <p>J. Ratchet pawl spring missing</p> <p>K. Defective pump valve assembly</p>	<p>A. Add washer solution</p> <p>B. Cut short length off end of hose to insure air tight connection or replace hose</p> <p>C. Clean screen</p> <p>D. Check electrical connections and repair if necessary</p> <p>E. Locate open circuit and repair</p> <p>F. Replace wiper switch</p> <p>G. Replace ratchet relay</p> <p>H. Clean washer nozzles</p> <p>I. Replace ratchet wheel</p> <p>J. Replace ratchet pawl spring</p> <p>K. Replace pump valve assembly</p>
2. Washer pumps continuously when wipers are operating	<p>A. Grounded wire from ratchet relay to switch</p> <p>B. Wiper switch defective</p> <p>C. Ratchet wheel tooth missing</p> <p>D. Ratchet wheel dog broken or not contacting ratchet wheel teeth</p> <p>E. Lock-out tang broken or bent on piston actuator plate</p>	<p>A. Locate grounded wire and repair</p> <p>B. Replace wiper switch</p> <p>C. Replace ratchet wheel</p> <p>D. Replace or repair ratchet wheel dog</p> <p>E. Replace piston actuator plate</p>

2. Disconnect wires from pump relay.
3. Remove plastic pump cover.
4. Remove attaching screws securing pump frame to motor gearbox and remove pump and frame.

WASHER DISASSEMBLY

Ratchet Dog

Remove attaching screw and lift ratchet dog off mounting plate.

Ratchet Pawl and Pawl Spring

Disengage pawl spring from pawl and slide pawl off cam- follower pin.

Ratchet Wheel

Pry ratchet spring out of slot in shaft, hold relay armature against relay coil and slide ratchet wheel off shaft.

CAUTION: When reassembling ratchet wheel be careful not to damage ratchet dog.

Four-Lobe Cam

Remove the push-on retainer and slide cam off shaft (Fig. 2- 105).

Relay-Terminal Board Assembly

1. Remove four-lobe cam.

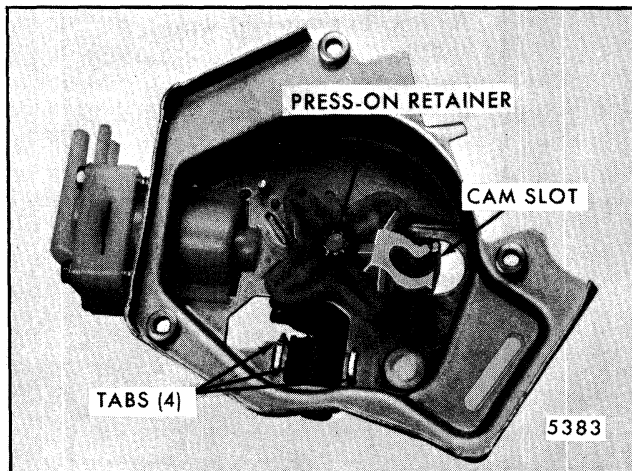


Fig. 2-105-Removing Four Lobe Cam

2. Remove ratchet pawl and pawl spring.
3. Remove relay armature and spring.
4. Chisel off the four bent-over tabs that secure the coil mounting bracket to the base (Fig. 2-105). Remove relay coil and terminal board assembly. To mount a replacement relay assembly, hold it securely against the base mounting surface and bend locking tabs over.

CAUTION: Be careful not to damage coil winding or terminals.

5. To check the pump programming mechanism, manually rotate the four-lobe cam through complete cycle (360 degrees) and observe if pump is operating as previously explained.

Pump Assembly

1. Remove ratchet wheel, ratchet wheel dog, ratchet pawl and spring.
2. To release the plastic pump housing from the sheet metal base, pull it in the direction toward the valve end until the grooves in the housing clear the base. Next, detach the assembly from the cam-follower pin (Fig. 2-102).

NOTE: The piston and plastic housing is serviced as a complete assembly.

Valve Assembly

1. Note position of valve assembly relative to the pump housing for reassembly then remove four screws that secure valve assembly to housing.
2. Remove housing-to-valve-body gasket and save for reassembly.

Assembly of Washer Pump to Wiper Motor

NOTE: Wiper motor gear must be in PARK position (Fig. 2-106) to assemble pump to wiper motor.

1. Remove plastic pump cover.
2. Rotate the 4-lobe cam until index hole (.125" dia.) in the cam is aligned with the hole in the pump mounting plate. Insert a pin through both holes to maintain cam in position (Fig. 2-107).
3. Position pump on wiper so that slot in 4-lobe cam fits over the gear drive pin which is part of the lock pawl (Fig. 2-107). Secure pump to gear

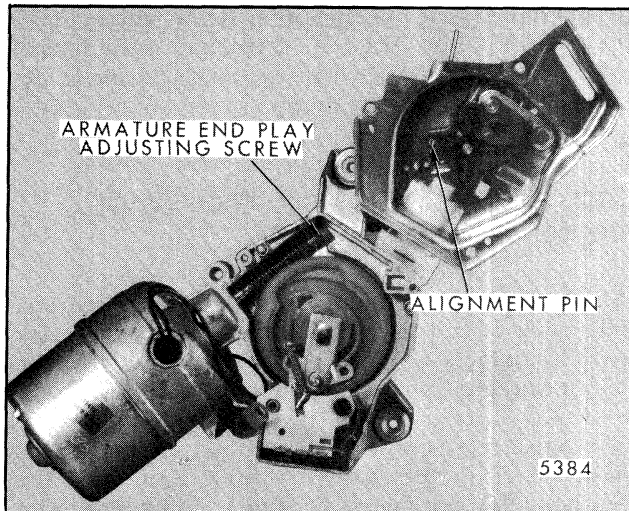


Fig. 2-106-Installing Pump to Motor

housing and remove locator pin, temporarily connect wiring connector.

4. Turn on wiper and washer pump to check pump operation.

NOTE: A loud knocking noise would indicate that the pump cam has not engaged the drive pin properly.

5. Install pump cover.

MODIFIED PULSE WIPER WASHER SYSTEM

Description

The modified pulse windshield washer system is re-

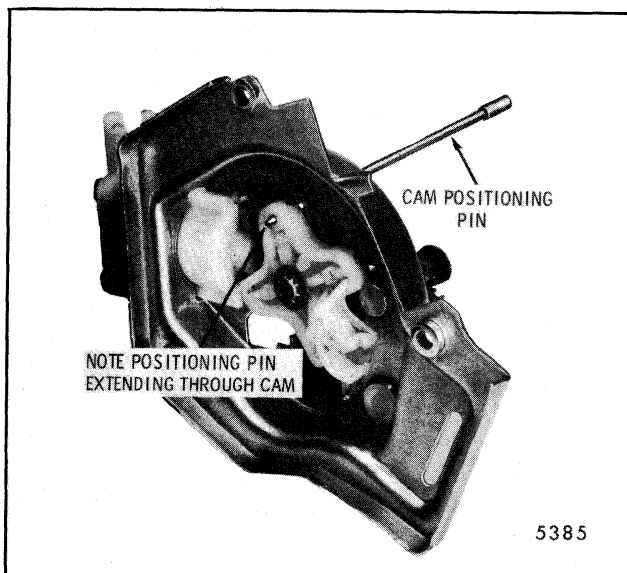


Fig. 2-107-Cam Alignment Pin Installation

ferred to as a programmed system and functions as follows:

Momentarily depressing the dash control wash button, when the dash switch is in the "OFF" position, starts a wash cycle. The wash cycle consists of eight "squirts" of solution, four drying wipes; then automatically parks the blades and shuts the system OFF. If the dash switch is in any position other than OFF, the washer system functions as shown in Figure 2-108.

NOTE: The dash switch wash button on pulse wiper systems functions differently from that used with the standard system. It does NOT mechanically move the wiper switch to the "ON" position when depressed. The turning "ON" of the wiper motor is accomplished electrically and will be covered in the "Washer Pump Operation" section.

Washer Pump

The washer pump used on the modified pulse wiper differs considerably from the pump used on a standard wiper. Referring to Figure 2-110 note the following components NOT found on a standard pump: (1) pulse relay, (2) override switch, (3) holding switch, (4) solid state electronic device and, (5) a special drive cam (Fig. 2-111). These special components serve the following functions:

1. Pulse relay - acts as a switch to complete B plus feed to the wiper motor windings.
2. Override switch - used during washer pump operation to provide alternate or auxiliary circuits. The switch is actuated by a projection on the rim

WIPER SWITCH POSITION			
Lo	Med	Hi	Delay
Wiper runs and washes in Lo Speed	Wiper runs and washes in medium Speed	Wiper runs and washes in Hi Speed	Delay operation is overridden, wiper runs and washes in continuous LO speed; completes programmed wash cycle plus four drying wipes and then automatically reverts back to pulse operation.
		5369	

Fig. 2-108-Washer Operation in Various Switch Positions

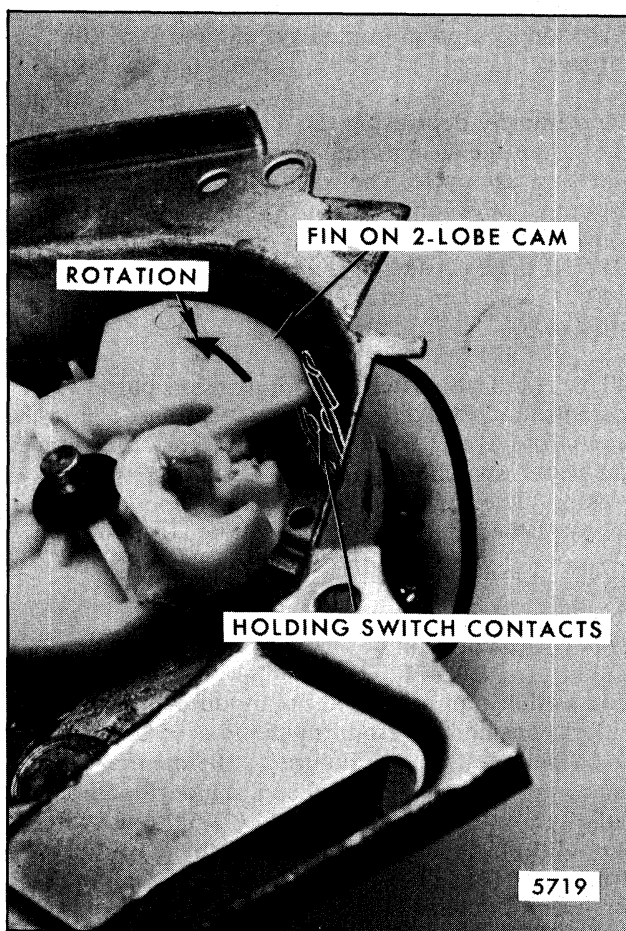


Fig. 2-109-Holding Switch Contacts

of the ratchet gear. Detailed explanation of the switch operation is covered in "Operating Principles".

3. Holding switch - used in conjunction with the timing device to control the delay mode of operation. This switch is actuated by a fin on the washer pump drive cam (refer to Fig. 2-109).
4. Timing device - consists of a transistor, capacitor, two diodes and a resistor mounted on an insulating board.
5. Drive cam - drives the pump mechanism and also actuates the holding switch.

Washer Pump Electrical Circuits and Operation

To start a wash cycle of operation requires three relay circuits. Referring to Figure 2-112, note that the gearbox relay, pulse relay and washer pump ratchet relay coil circuits are completed to ground simultaneously when the dash switch wash button is depressed.

Depending on the position of the dash switch - OFF, LO, MED, HI or DELAY - three main variations of circuitry can develop when the wash button is depressed to start a wash cycle.

Dash Switch in OFF Position - Wash Button Depressed - Ignition Switch On

The wash button temporarily completes the gearbox relay coil circuit to ground. This causes the relay switch contacts to close completing B plus to the motor windings and the pulse relay coil.

The pulse relay coil is connected to ground at the dash switch in the "OFF" position and when the gearbox relay completes the B plus circuit, the pulse relay coil circuit is simultaneously completed. The pulse relay switch contacts then close, completing the B plus feed circuit to the motor, starting the motor.

The washer pump ratchet relay coil circuit is simultaneously completed to ground by the wash button. With this relay energized, the pump is unlocked from its idling or lock-out position starting a wash cycle. As soon as the wash cycle starts, the ratchet gear starts to rotate which permits the override contacts to close (Fig. 2-113). The closed override switch provides an alternate path to ground for the gearbox relay when the wash button is released (Fig. 2-114). This alternate circuit is required to prevent the wiper motor from shutting off when the wash button is released.

When the ratchet gear has been rotated 360 degrees (12 teeth), the projection on the rim of the ratchet opens the override switch contacts (Fig. 2-114), which opens the gearbox relay coil circuit. Opening the gearbox relay coil circuit causes the wiper to shut off as described under "Motor Operation".

Dash Switch in LO, MED or HI - Wash Button Depressed - Ignition Switch On

Whenever the wiper motor is operating in any of the continuous speed modes - LO, MED, HI and the wash button is depressed to start a wash cycle, the wiper will wash and wipe at that speed.

Since the wiper is running, the pulse and gearbox relay circuits are already complete. Thus, depressing the wash button actually completes only the washer pump ratchet relay coil to ground to start the pumping action. At the completion of the wash cycle the motor continues to run at the speed at which the dash switch is positioned.

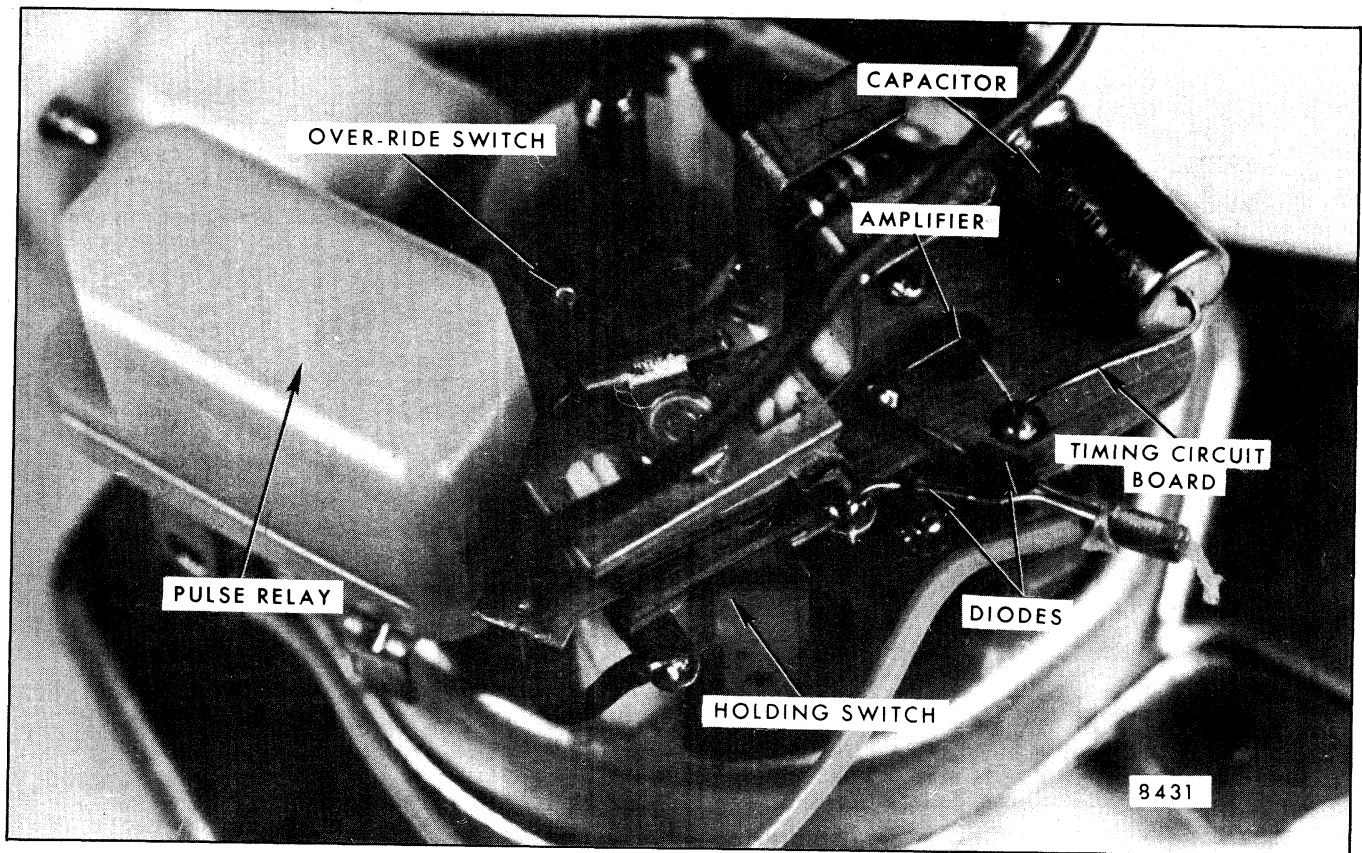


Fig. 2-110-Modified Pulse Washer Pump Timing Circuit

Dash Switch in DELAY Position - Wash Button Depressed - Ignition Switch On

Depressing the wash button to start the wash cycle overrides the delay mode and provides continuous wiper operation in "LO" speed during the wash cycle.

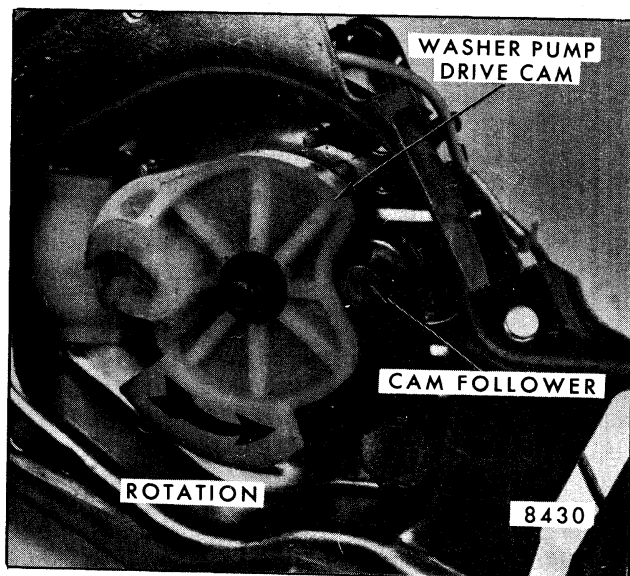


Fig. 2-111-Washer Pump Cam Rotation

cle. At completion of the wash cycle, the wiper motor automatically reverts to the "DELAY" mode of operation.

The above operation is accomplished as follows:

When the dash switch is in the "DELAY" position, the gearbox relay coil circuit is complete. This, in turn, completes the B plus circuit to the pulse relay. However, the pulse relay coil circuit is completed during pulse operation.

In order to override the delay mode and provide continuous "LO" speed operation during the wash cycle, a bypass circuit around the timing device is accomplished as follows:

Momentarily depressing the wash button completes the pulse relay coil and washer pump ratchet relay coil circuits to ground. This causes the wiper motor and pump to start immediately regardless of the delay mode time setting.

As soon as the wiper starts, the pump also starts, which causes the override switch contacts to close. This provides a bypass circuit to ground for the pulse relay as shown in Figure 2-115.

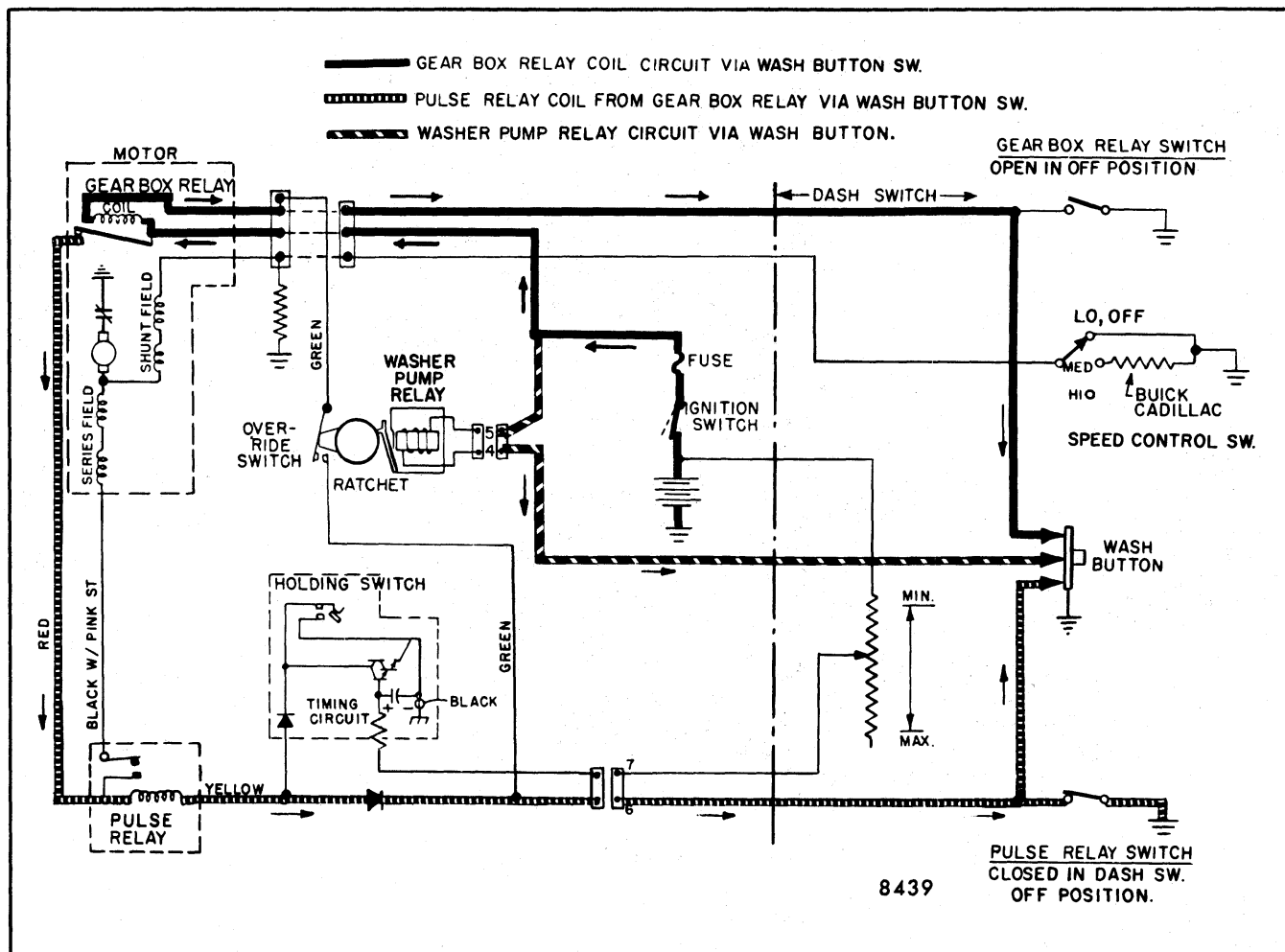


Fig. 2-112-Start of Wash Cycle - Wash Button Pushed "In"

At completion of the wash cycle, the projection on the rim of the ratchet gear opens the override switch contacts which, in turn, opens the pulse relay bypass circuit, and the wiper motor reverts to the pulse or delay mode of operation.

Washer Pump Mechanical Operation

The pump mechanism used on the modified pulse wiper washer pump is very similar to that used on the standard depressed park wiper washer system.

The basic pump mechanism consists of a spring-loaded piston assembly enclosed in a plastic cylinder. Attached to the piston and extending out of the cylinder housing is an actuator plate. A valve assembly consisting of two exhaust valves and one intake valve is attached to the opposite end of the cylinder housing and controls the flow of washer solution (Fig. 2-116).

NOTE: Figures 2-116 and 2-117 show the pump with most of the programming parts removed for illustrative purposes.

Referring to Figure 2-116 note that the elongated slot of the piston actuator plate fits over a pin. This pin is a part of a cam-follower assembly which is actuated by a drive cam located on the underside of the pump mounting plate (Fig. 2-111). When the wiper is running, the drive gear rotates the drive cam which in turn causes the cam-follower to move back and forth.

Note that a tang on the piston actuator plate is resting against a ramp on the lower surface of the ratchet gear (Fig. 2-116). This holds the piston actuator plate in a lock out position as long as the RATCHET GEAR IS NOT ROTATED.

With the piston actuator plate in the lock out position and the wiper running, the cam-follower pin moves back and forth in the elongated slot of the

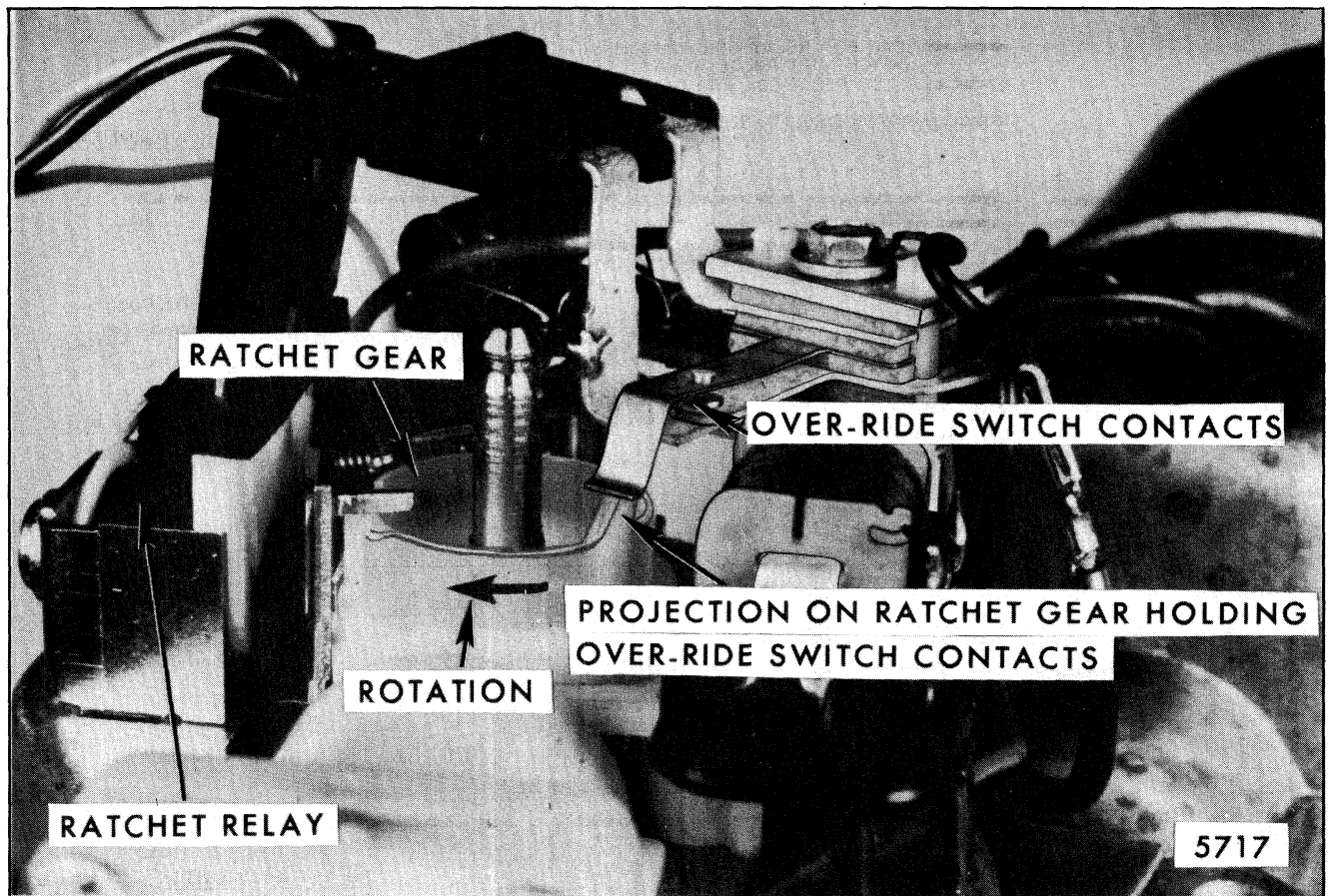


Fig. 2-113-Pump Programming Mechanism

piston actuator plate and no pumping action can occur.

Actuating the washer button to obtain windshield washer pump operation starts the wiper motor and energizes the pump relay. With the relay energized, the relay armature is pulled toward the coil, allowing the ratchet pawl to drop out of the relay armature opening and engage the teeth of the ratchet wheel. Figure 2-117 shows the pawl extending through window of relay armature.

The ratchet pawl which is actuated by the same cam-follower pin that moves the piston actuator plate then begins to rotate the ratchet wheel. Rotating the ratchet wheel one tooth moves the ratchet wheel ramp away from the tang of the piston actuator plate (Fig. 2-116), permitting the piston spring to expand which, in turn, forces the piston toward the valve assembly resulting in the first exhaust stroke (Fig. 2-119).

During the first exhaust stroke the expanded piston spring also pulls the piston actuator plate up tightly against the cam-follower pin. The continuing rotation of the drive cam will now cause the cam-fol-

lower pin to move the actuator plate and piston in a direction that will compress the piston spring, causing washer solution to be drawn into the piston housing via the intake valve. (intake stroke, Fig. 2-119).

Two intake and two exhaust strokes occur for each revolution of the drive cam.

The pumping operation is terminated automatically when the ratchet wheel has rotated a full 360 degrees. This is accomplished as follows:

As the ratchet wheel approaches the completion of its 360 degrees travel, two functions occur simultaneously:

1. A leg on the relay armature rides up a ramp located on the outer surface of the ratchet gear rim. When the leg reaches the top of the ramp, it moves over the top edge of the ratchet gear rim. This action allows the ratchet gear pawl to re-enter the armature opening preventing further rotation of the ratchet gear until the next time the relay coil is energized from the washer button. (Refer to Figure 2-118 for position of armature leg while pump is idling.)

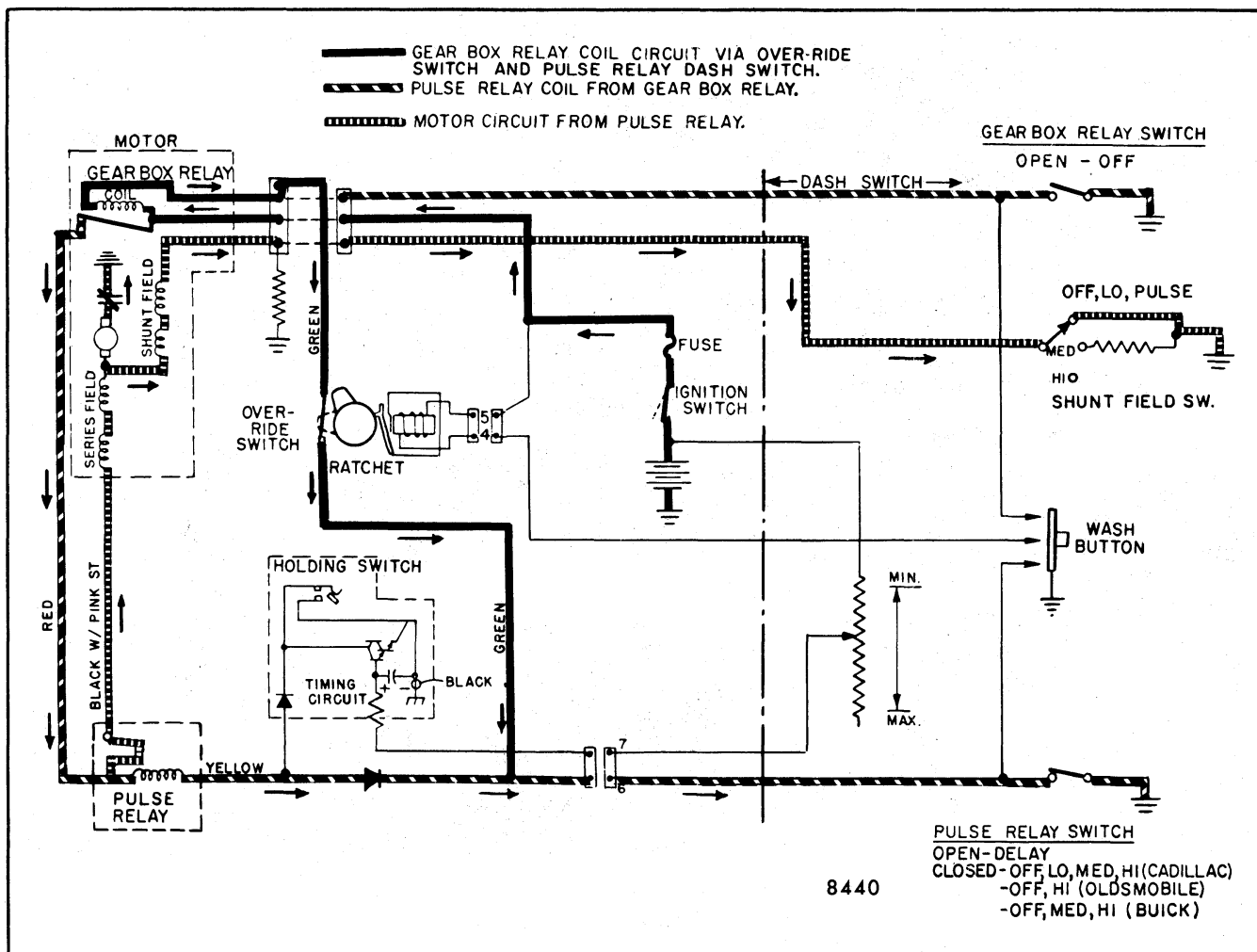


Fig. 2-114-Gearbox Relay Holding Circuit Dash Switch Released Motor Operation Maintained

- The tang of the piston actuator plate is resting once more against the ramp on the lower side of the ratchet wheel (Fig. 2- 117).

DIAGNOSTIC PROCEDURES - MODIFIED PULSE WASHER SYSTEM

The following procedures cover that part of the washer system that is related to the pump mechanism when the motor is operating correctly.

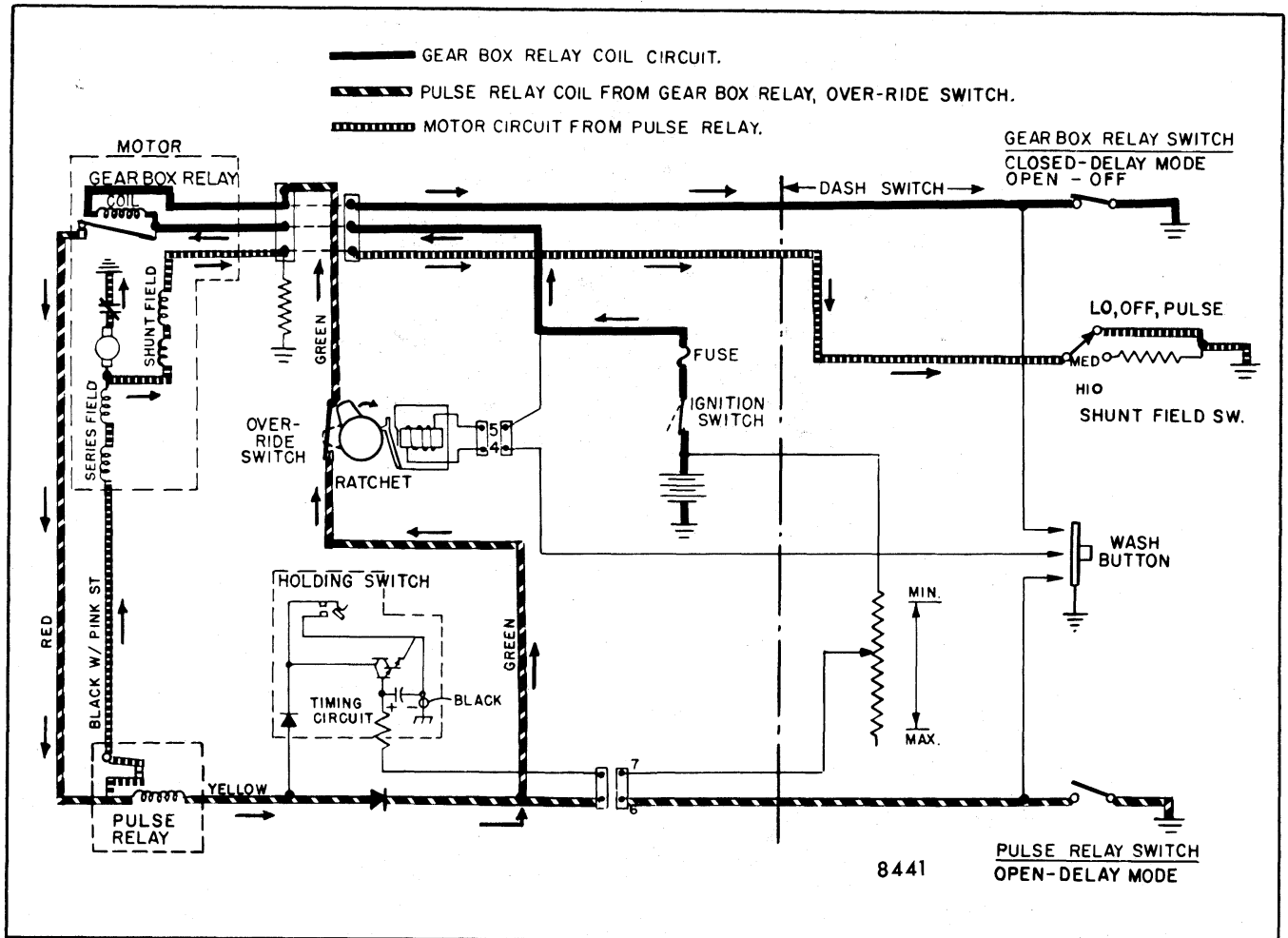


Fig. 2-115-Pulse Relay Circuit Via Override Switch Bypass Time Delay Circuit - Continuous Wiper Operation During Wash Cycle

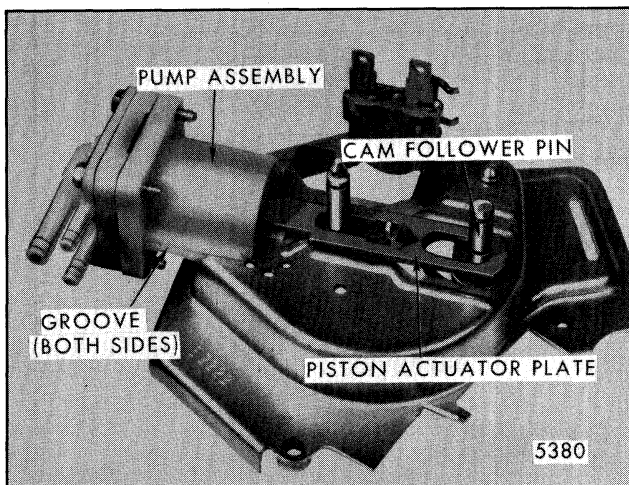


Fig. 2-116-Pump Intake Stroke

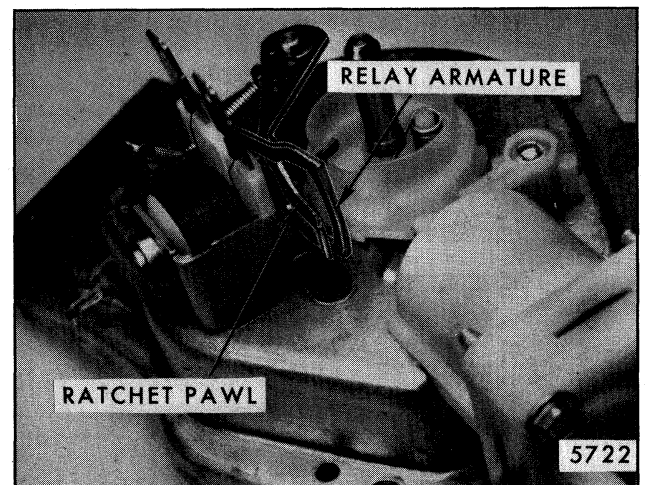


Fig. 2-117-Ratchet Pawl and Armature

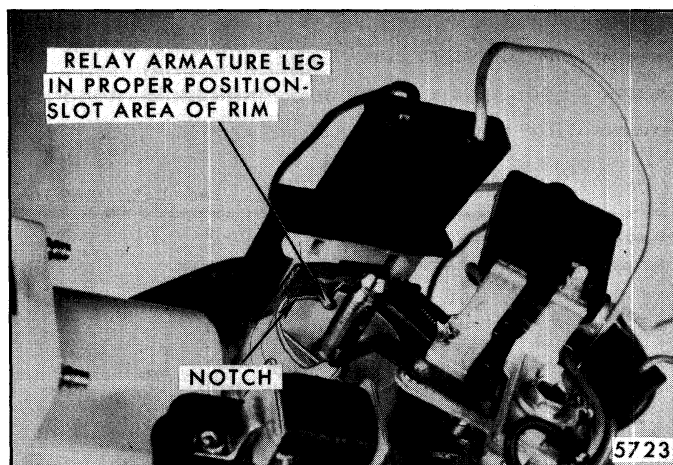


Fig. 2-118-Pump in Idling Position

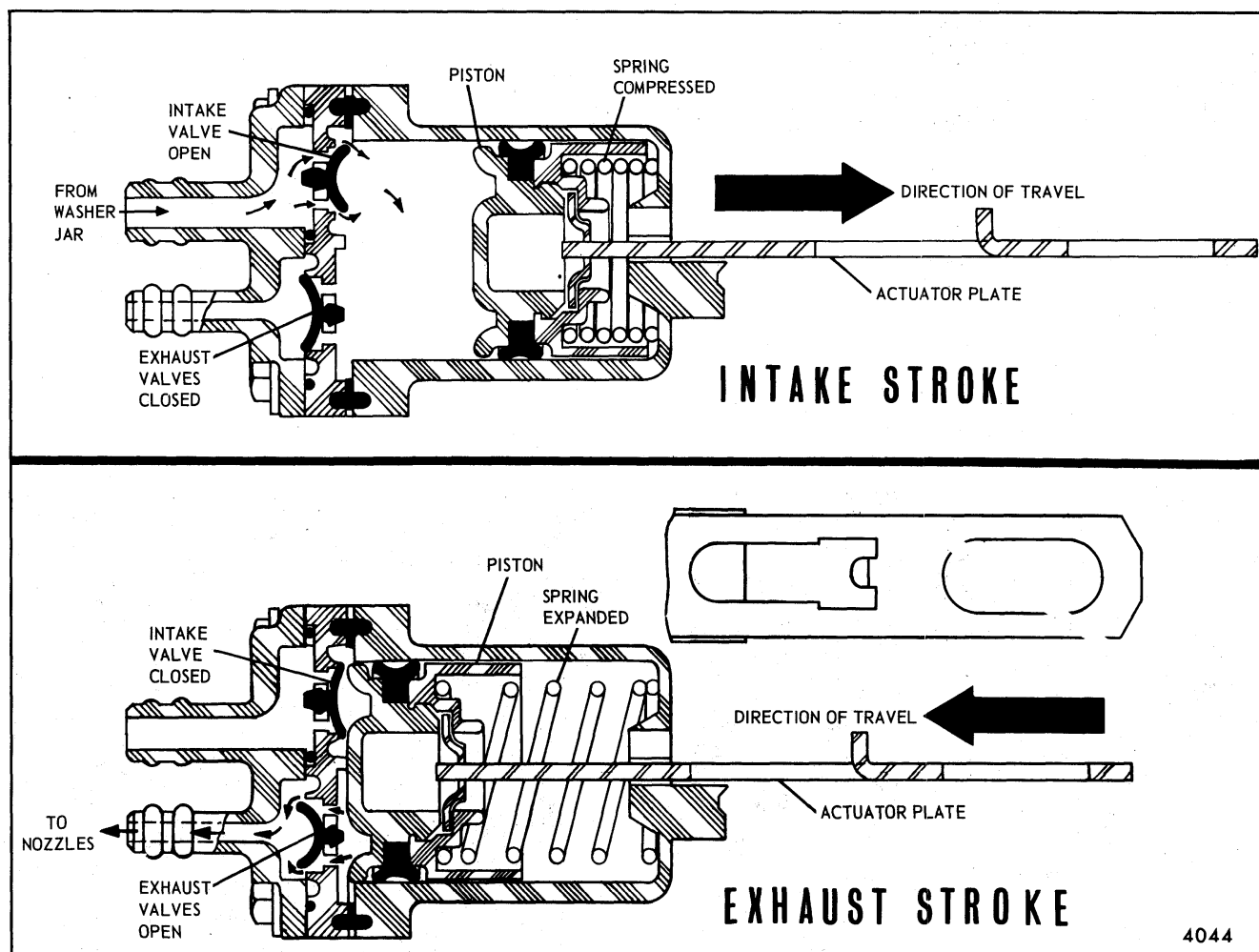


Fig. 2-119-Intake and Exhaust Stroke

DIAGNOSIS CHART
MODIFIED PULSE WASHER SYSTEM

CONDITION	REFERENCE
1. Windshield washer system inoperative. (Wiper motor operates correctly).	Fig. 2-121 and 2-122
2. Washer Pump Noisy - makes loud "klunking" type noise.	Fig. 2-123
3. Wiper shuts off before wash cycle is completed. (Blades start out of park position, pump delivers one "squirt", and blades return to park position).	Fig. 2-124

8986

Fig. 2-120-Modified Pulse Washer System - Diagnosis Chart Index

WINDSHIELD WASHER SYSTEM INOPERATIVE (WIPER MOTOR OPERATES CORRECTLY)

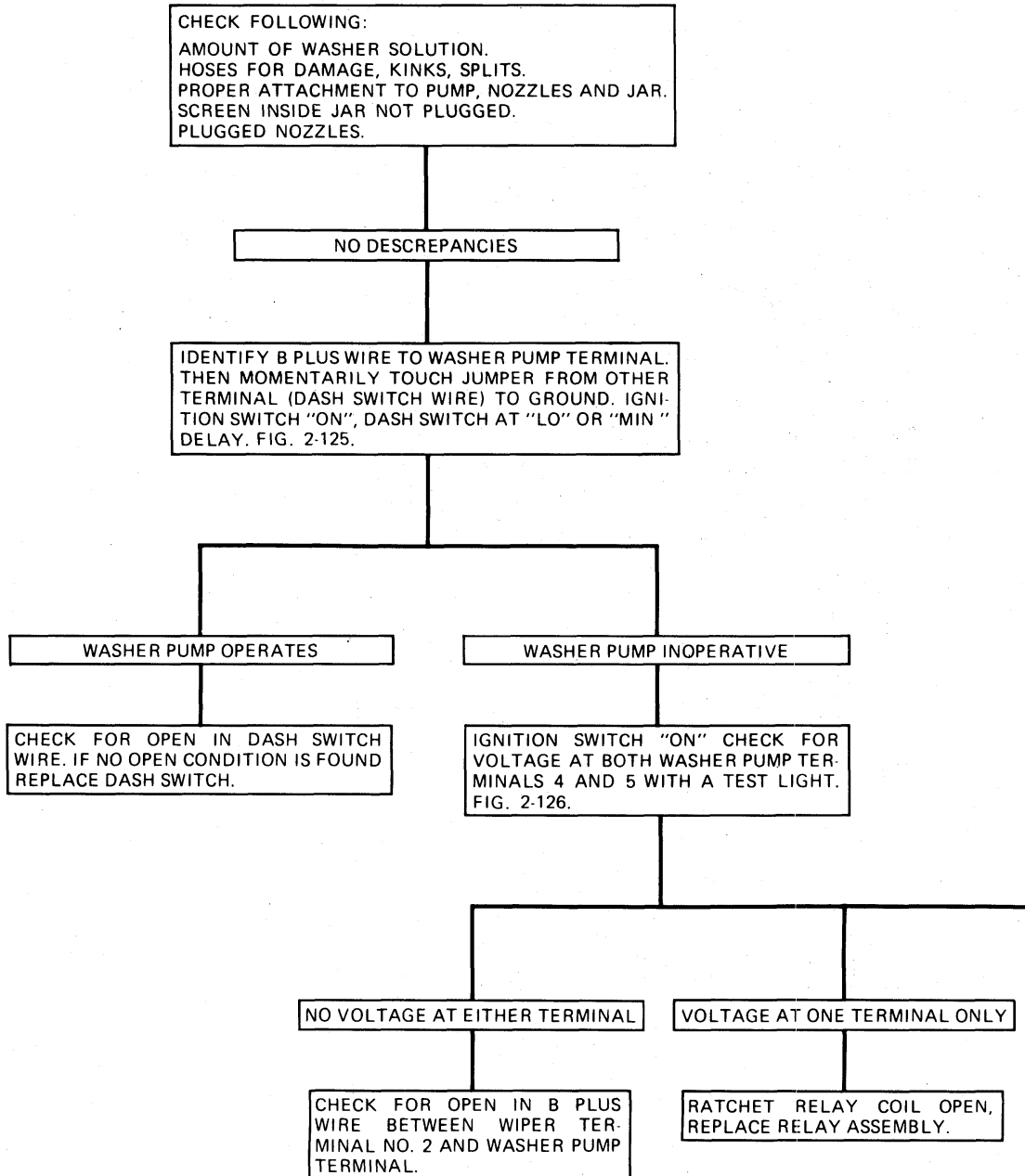
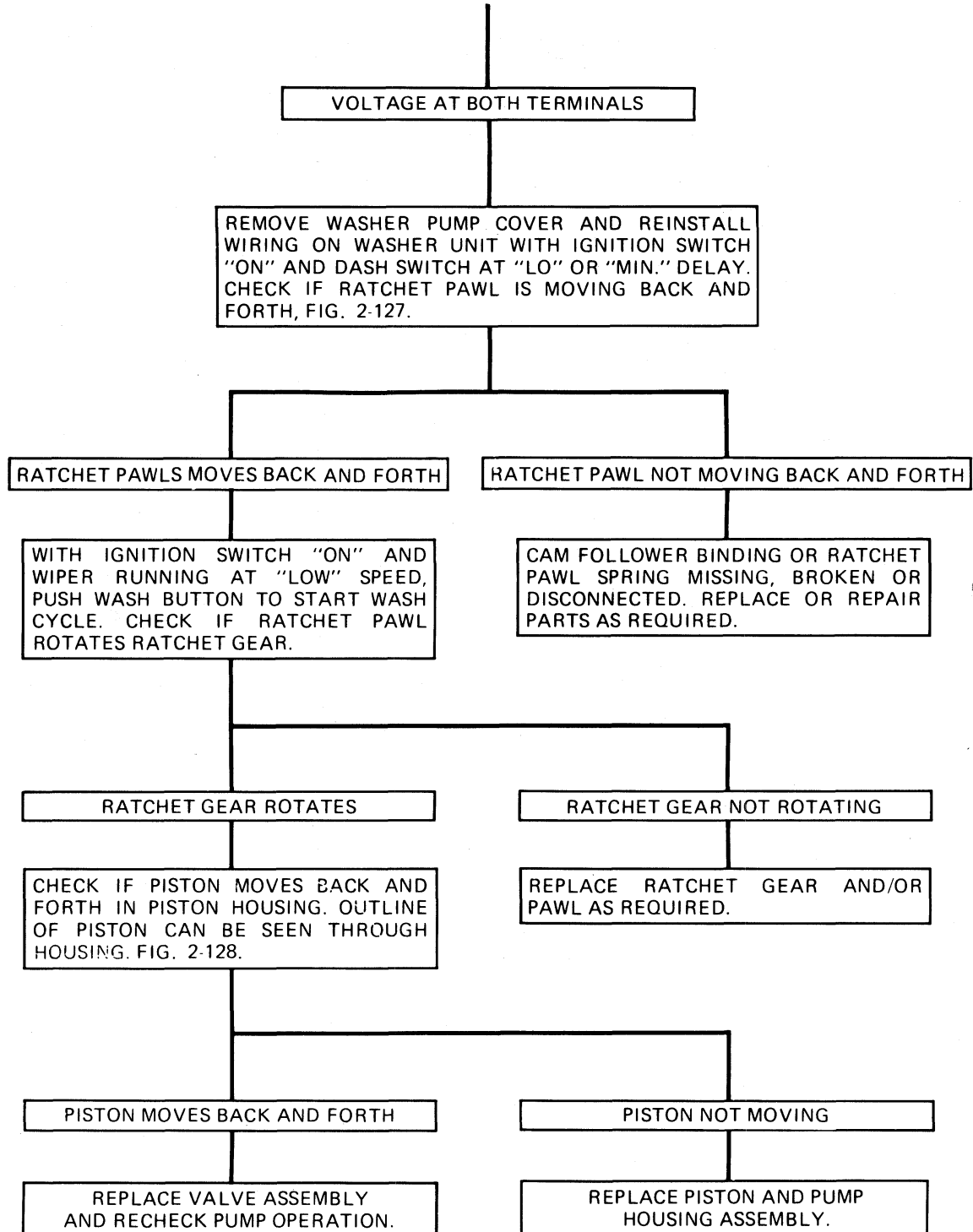


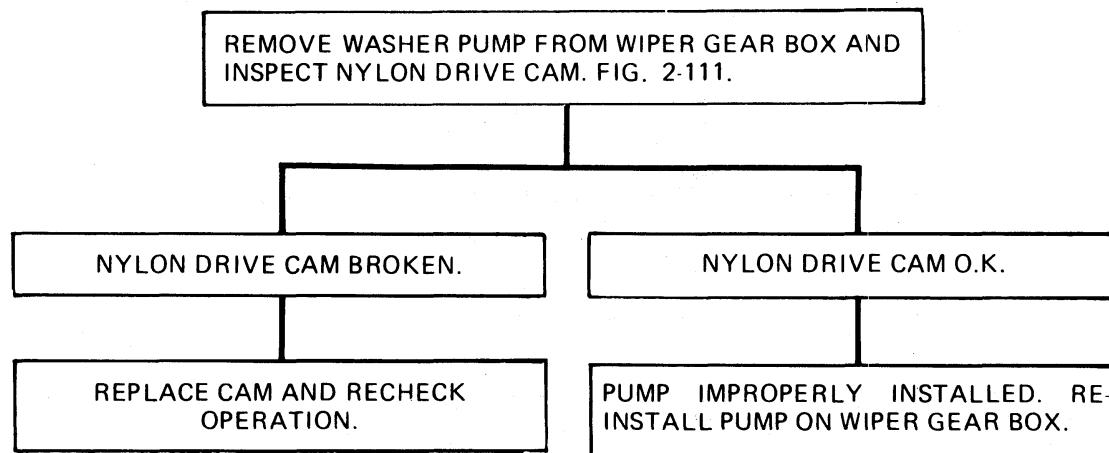
Fig. 2-121-Modified Pulse Washer System - Diagnosis Chart - Condition 1

WINDSHIELD WASHER SYSTEM INOPERATIVE**(WIPER MOTOR OPERATES CORRECTLY)****(Continued)**

8988

Fig. 2-122-Modified Pulse Washer System - Diagnosis Chart - Condition 1

WASHER PUMP NOISY
(MAKES LOUD KLUNKING NOISE)



8989

Fig. 2-123-Modified Pulse Washer System - Diagnosis Chart - Condition 2

WIPER SHUTS "OFF" BEFORE WASH CYCLE IS COMPLETED

(BLADES START OUT OF PARK POSITION, PUMP MAKES ONE "SQUIRT"
AND BLADES RETURN TO PARK POSITION AND SHUT "OFF")

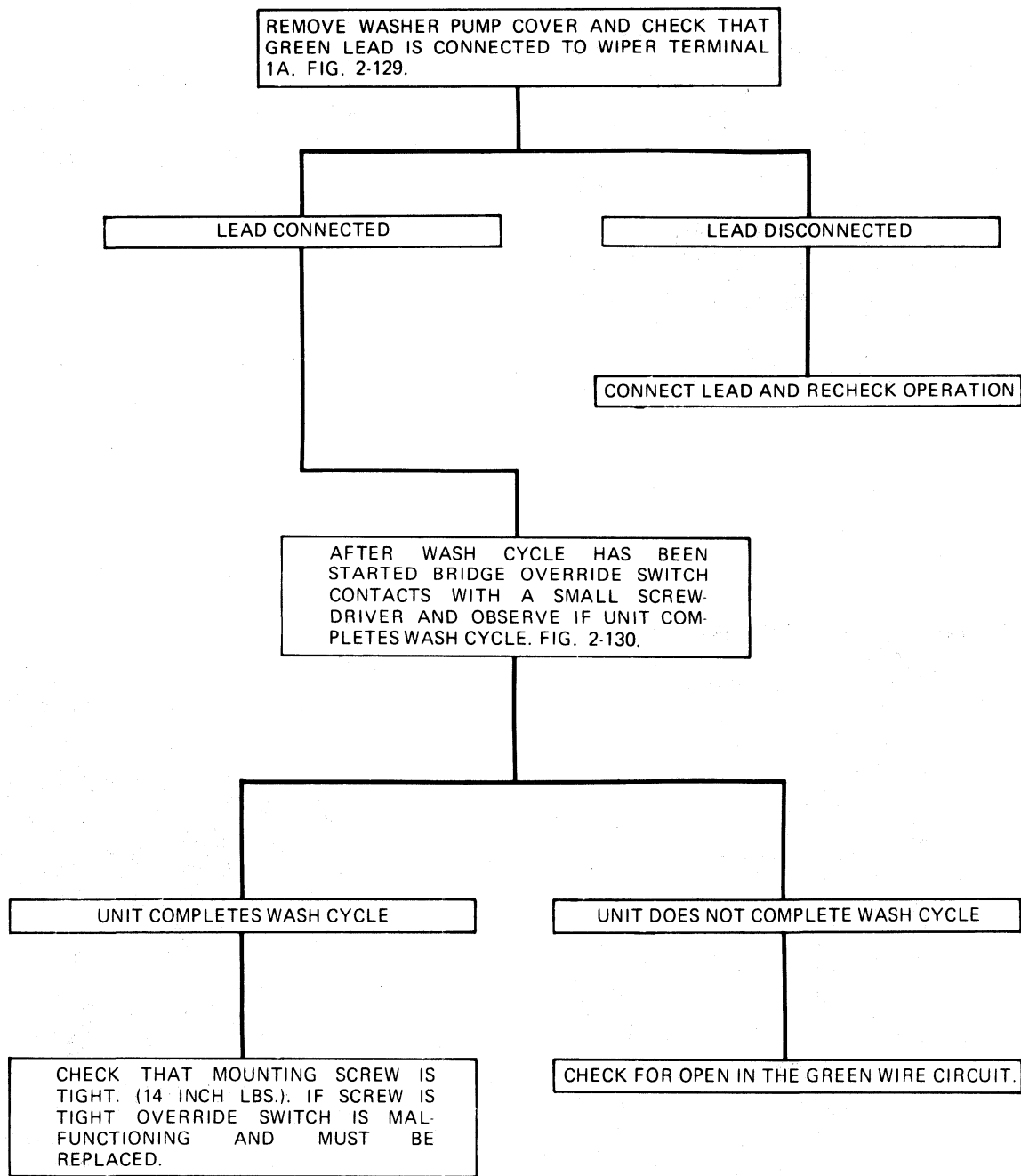


Fig. 2-124-Modified Pulse Washer System - Diagnosis Chart - Condition 3

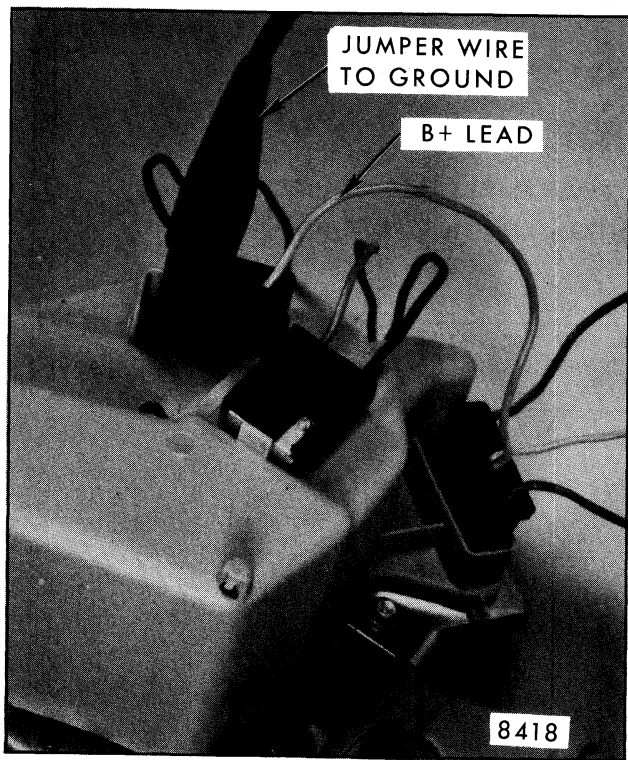


Fig. 2-125-Condition 1 - Step 2

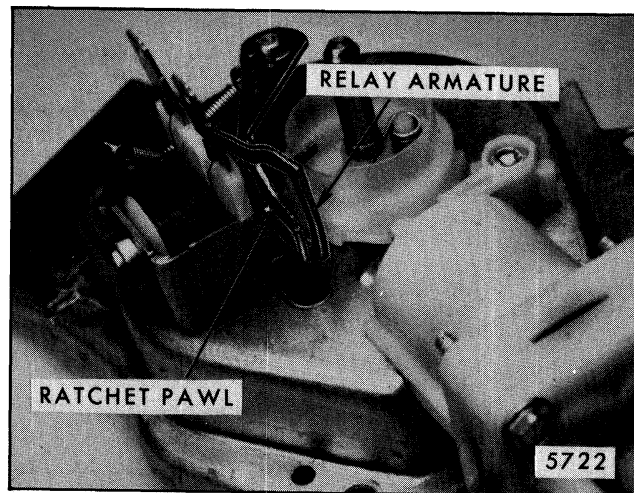


Fig. 2-127-Condition 1 - Step 4

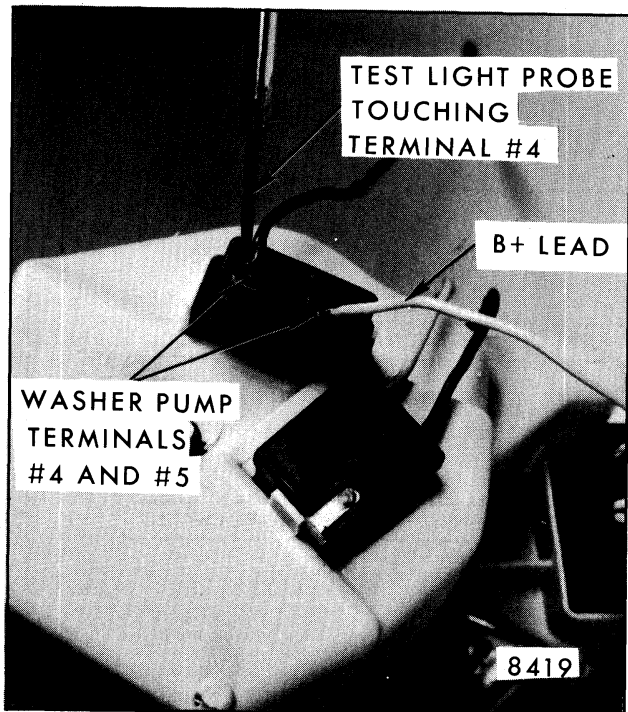


Fig. 2-126-Condition 1 - Step 3

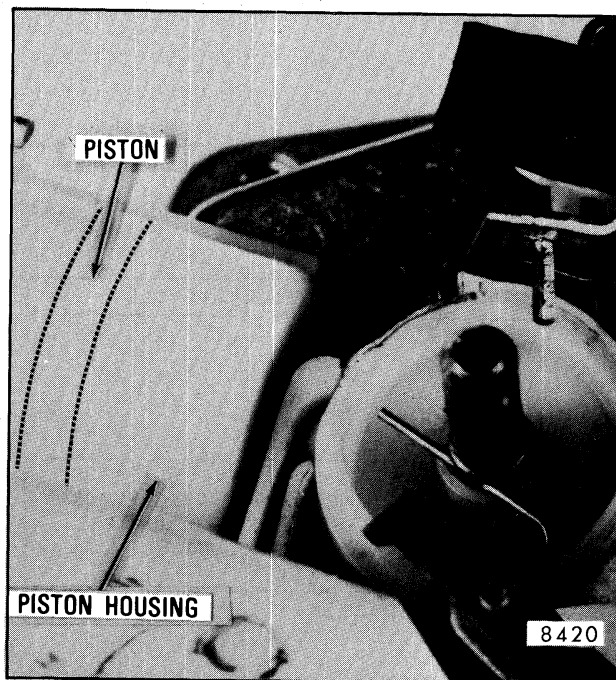


Fig. 2-128-Condition 1 - Step 6

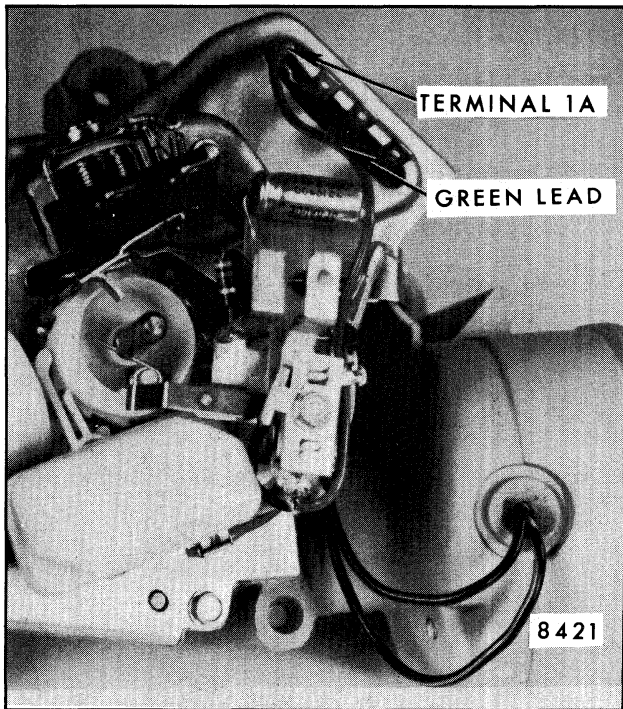


Fig. 2-129-Condition 3 - Step 1

DISASSEMBLY - ASSEMBLY PROCEDURES

Washer Pump Removal

1. Remove complete wiper washer assembly from vehicle.

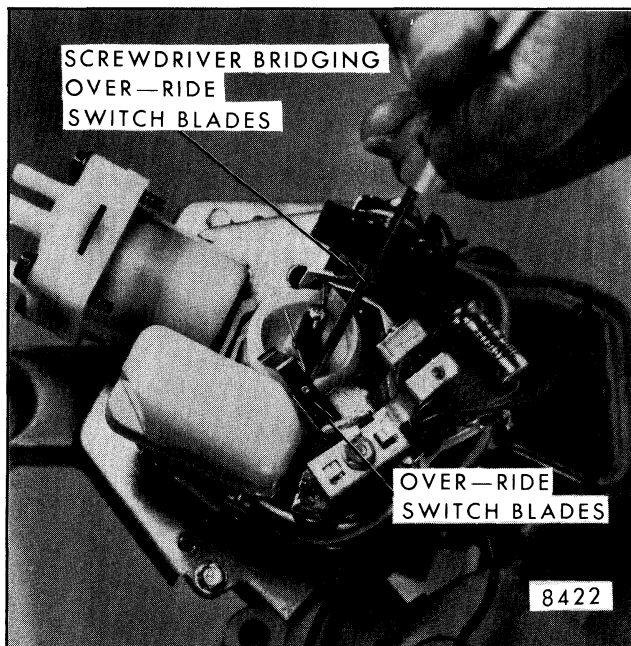


Fig. 2-130-Condition 3 - Step 2

2. Remove plastic tab from terminal 6 and 7 opening and pull plastic cover off mounting post (Fig. 2-131).
3. Disconnect the green lead from terminal 1A, red and black with pink stripe leads from pulse relay terminals (Fig. 2-132).
4. Remove the three screws that attach pump to gearbox.

Washer Pump Installation

NOTE: Gearbox mechanism must be in park position (Fig. 2-133).

1. Install locator pin in pump mechanism as shown in Figure 2-133.

NOTE: If necessary to rotate cam to install locator pin, be sure to rotate cam counterclockwise.

2. Position pump assembly on gearbox and install the three attaching screws (Fig. 2-133).

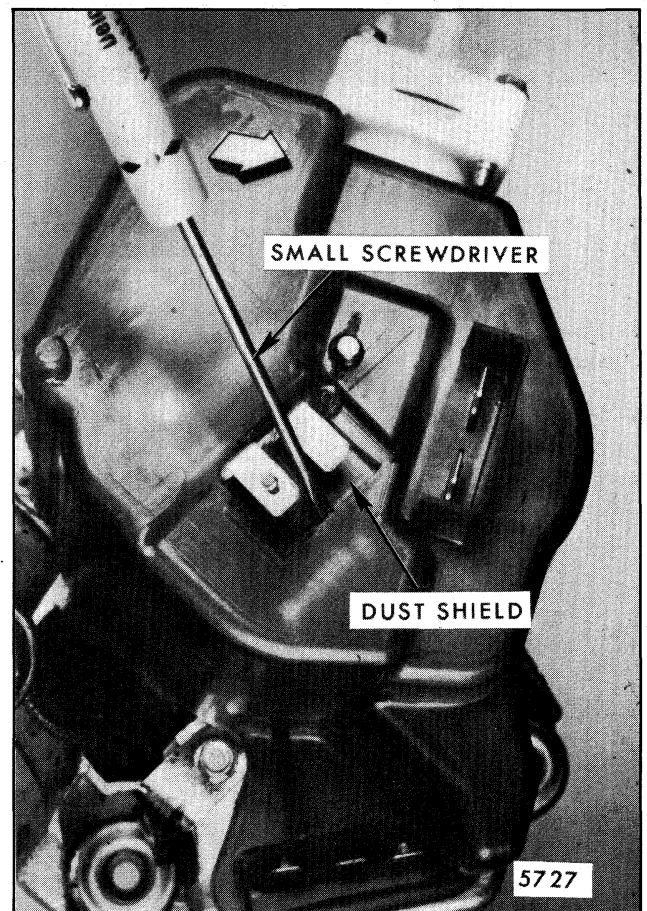


Fig. 2-131-Washer Pump Cover Removal

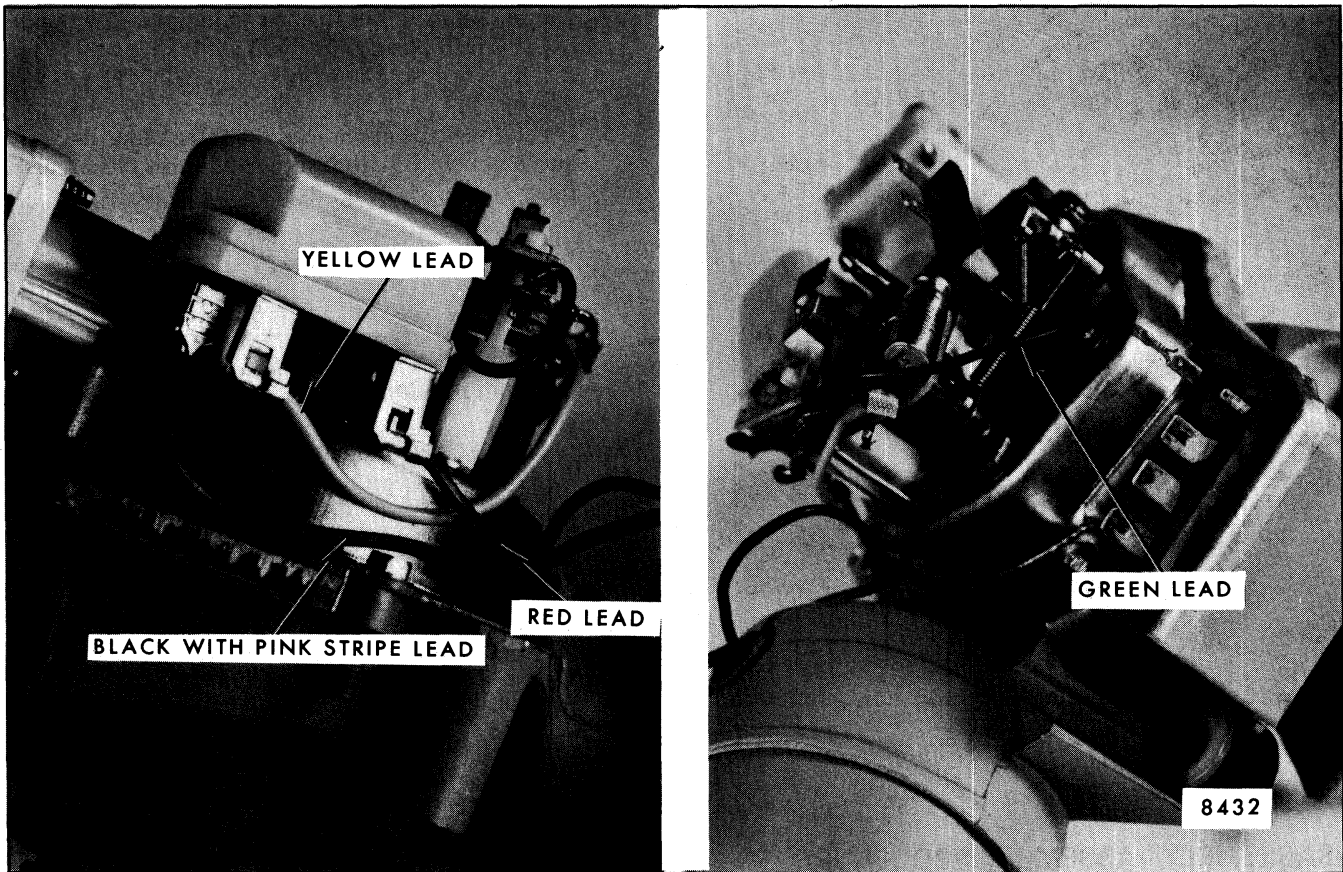


Fig. 2-132-Modified Pulse Relay Terminals and Leads

3. Remove locator pin.
4. Route and attach the red, green and black with pink stripe leads as shown in Figure 2-132.
5. Position cover on washer pump mechanism and snap it over the mounting pin.
6. Reinstall small plastic plate in terminal 6 and 7 opening, refer to Figure 2-133.

7. Reinstall wiper in vehicle and attach wiring and hoses.

Washer Pump Components

1. Valve Assembly:

- a. Note position of valve assembly pipes relative to the pump housing for reassembly, then remove the four screws that attach valve assembly to housing (Fig. 2-134).
- b. Remove seal ring between housing and valve body and save for reassembly.

2. Drive Cam:

Remove push-on retainer and slide cam off shaft (Fig. 2-135). New retainers are provided in cam service packages.

3. Timing Device, Holding Switch and Override Switch Assembly, Pulse Relay Assembly:

- a. Remove attaching screw and lift the pulse relay timing device, holding switch and over-

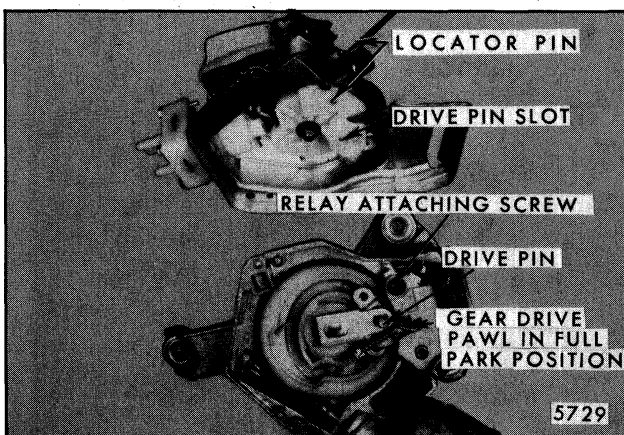


Fig. 2-133-Installing Pump to Motor

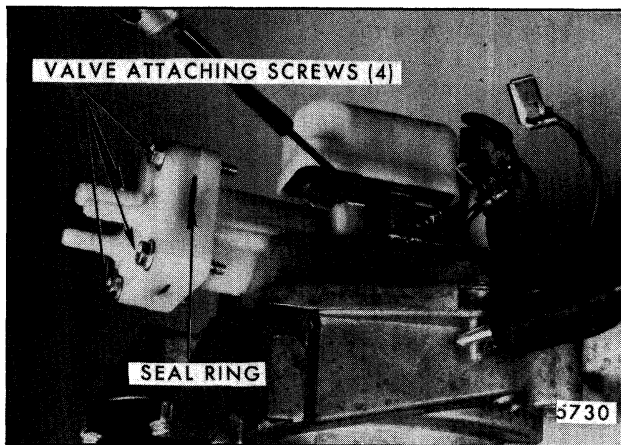


Fig. 2-134-Valve Assembly

ride switch assembly off the washer frame surface.

- b. Disconnect red and yellow leads from pulse relay and detach from locator pins.
- c. To reassemble, position pulse relay on switch base locator pins, rotate drive cam counter-clockwise to position shown in Figure 2-135, then secure the complete assembly to washer pump frame with the attaching screw.

NOTE: If screw strips, use a nut (6-32 thread) to secure.

- d. Reconnect red and yellow leads to appropriate pulse relay terminals (Fig. 2-132).

4. Ratchet Gear, Dog Spring, Ratchet Pawl, Relay Armature:

- a. Follow step a under item 3.
- b. Remove dog spring assembly (Fig. 2-136).

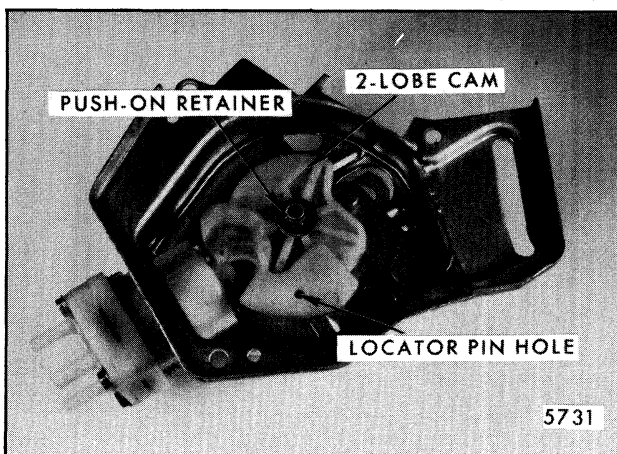


Fig. 2-135-Drive Cam

- c. Remove ratchet pawl retaining ring, disconnect pawl spring and slide pawl off cam-follower shaft (Fig. 2-136).
- d. Disconnect relay armature spring and remove armature (Fig. 2-136).
- e. Release ratchet gear spring from groove in shaft and slide ratchet gear off shaft.
- f. Reassemble ratchet gear of shaft.

NOTE: If necessary, move the piston actuator plate slightly to permit the ratchet gear collar to slide by the tang and bottom on the actuator plate.

5. Piston and Pump Housing:

- a. Follow steps a through e under item 4.
- b. To release the pump housing assembly from the sheet metal base, pull it in the direction toward the valve assembly until the grooves in the plastic pump housing clear the base. Next, detach the assembly from the cam-follower pin.

NOTE: The piston and housing is serviced as an assembly. The valve is serviced separately.

6. Relay-Terminal Board Assembly:

- a. Follow disassembly steps under items 2, 3 and steps c and d under item 4.
- b. Bend or chisel off the four bent over tabs that secure the coil mounting bracket to the base (Fig. 2-135).

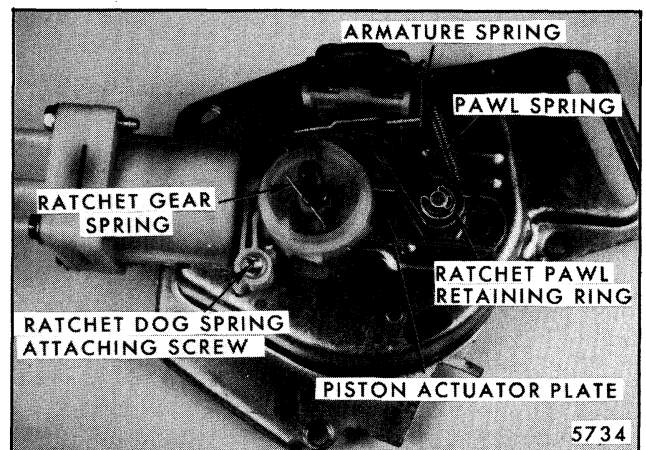


Fig. 2-136-Ratchet Pawl

To install a replacement relay assembly, hold it securely against the base mounting surface and bend locking tabs over.

CAUTION: *Be careful not to damage coil*

winding or terminals.

- c. Reassemble the ratchet pawl, pawl spring armature and armature spring and drive cam and recheck pump operation.

SECTION 3

UNDERBODY

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UNDERBODY ALIGNMENT - "F, H and X" Bodies

GENERAL BODY CONSTRUCTION

The "F, H and X" series bodies are of unitized construction. On "F and X" bodies, a stub frame supports the front end sheet metal, front suspension, engine and other mechanical components. On "H" bodies, integral front and rear frame side rails support the bolt-on front end sheet metal, front and rear suspension systems and other mechanical components. Unitized construction demands that underbody components be properly aligned to assure correct suspension location. In the event of collision damage, it is important that the underbody be thoroughly checked and, if necessary, realigned in order to accurately establish proper dimensions.

Since each individual underbody component contributes directly to the overall strength of the body, it is essential that proper welding, sealing and rust-proofing techniques be observed during service operations. The underbody components should be rust-proofed whenever body repair operations which destroy or damage the original rust-proofing are completed. When rust-proofing critical underbody components, it is essential that a good quality type of air dry primer be used (such as corrosion resistant zinc chromate or equivalent material). It is not advisable to use combination type primer-surfacers.

There are many classifications of tools that may be employed to correct the average collision damage situation including frame straightening machines, lighter external pulling equipment and standard body jacks.

ALIGNMENT CHECKING

An accurate method of determining the alignment of the underbody utilizes a measuring tram gage. The tram gage required to perform all recommended measuring checks properly must be capable of extending to a length of 90 inches. At least one of the vertical pointers must be capable of a maximum reach of 18 inches.

Dimensional checks indicated in the upper portion of Figures 3-1, 3-3 and 3-5 are calculated on a horizontal plane parallel to the plane of the underbody. Precision measurements can be made only if the tram gage is also parallel to the plane of the underbody. This can be controlled by setting the vertical pointers on the tram gage according to the dimensional checks shown in the lower portion of Figures 3-1, 3-3 and 3-5. For actual dimensions, see applicable charts in text.

A proper tramming tool is essential for analyzing and determining the extent of collision misalignment present in underbody construction.

To assist in checking alignment of the underbody components, repairing minor underbody damage or locating replacement parts, the following underbody dimensions and alignment checking information is presented.

REFERENCE POINT DIMENSIONS - (Figs. 3-1, 3-3 and 3-5)

Dimensions to gage holes are measured to dead cen-

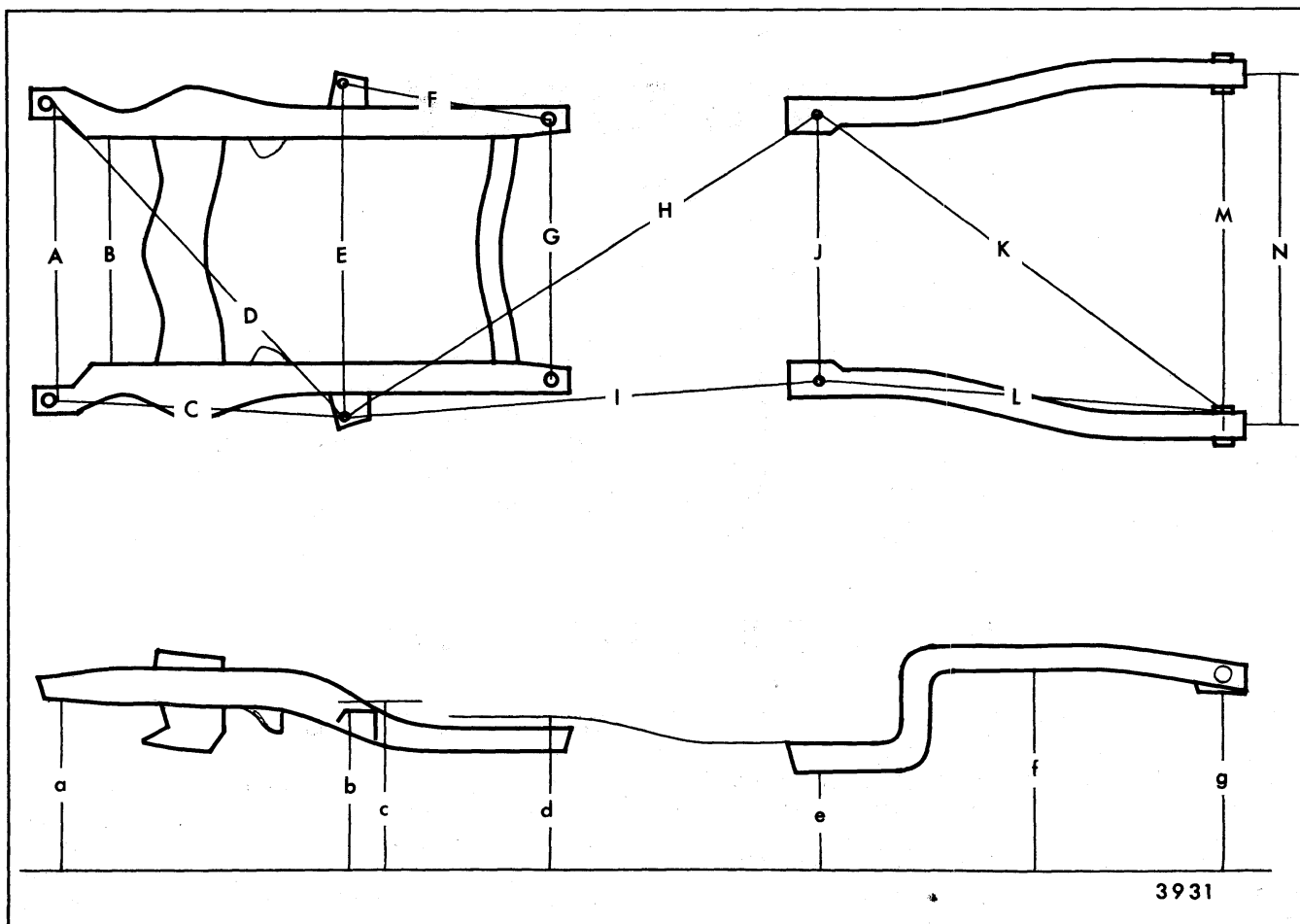


Fig. 3-1 Horizontal and Vertical Checking Dimensions - "F" Bodies

ter of the holes and flush to adjacent surface metal unless otherwise specified. The master gage holes adjacent to the No. 1 body mount and in the side rails near the rear spring front attachment on "X and F" bodies and the master gage hole forward of the shock absorber housing in the front side rails on the "H" body are key locations and should be used wherever possible as a basis for checking other reference points.

HORIZONTAL DIMENSIONS - "F" BODIES (Fig. 3-1)

Fig. Ref.	Dimension	Location
A	37-11/16"	Between rear edges at centerline of 1-5/16" holes in lower surface of rails directly below radiator support mounting location.
B	28-13/16"	Between inboard surface of rails at steering gear lower front mounting location and steering

Fig. Ref.	Dimension	Location
C	39-5/8"	idler arm lower mounting location. (These locations are not equally distant from frame centerline). Rear edge at centerline of 1-5/16" hole in lower surface of rail directly below radiator support mounting location to center of 5/8" master gage hole adjacent to No. 1 body mount on same side of frame.
D	57-1/4"	Rear edge at centerline of 1-5/16" hole in lower surface of rail directly below radiator support mounting location to center of 5/8" master gage hole adjacent to No. 1 body mount on opposite side of frame.
E	45-1/4"	Between centers of 5/8" master gage holes adjacent to No. 1 body mount in frame or body.

Fig. Ref.	Dimension	Location
F	32-7/8"	Center of 5/8" master gage hole adjacent to No. 1 body mount to center of No. 2 body mount location on same side of frame or body.
G	33-7/16"	Between centers of No. 2 body mount bolt holes.
H	84-11/16"	Center of 5/8" master gage hole adjacent to No. 1 body mount to center of 11/16" master gage hole in compartment side rail on opposite side of body.
I	74-1/16"	Center of 5/8" master gage hole adjacent to No. 1 body mount to center of 7/8" master gage hole in compartment side rail on same side of body.
J	37-1/16"	Between centers of 7/8" master gage holes in compartment side rails.
K	60-7/16"	Center of 7/8" master gage hole in compartment side rail to a point at inboard lower edge of opposite side rail on centerline of shackle bolt hole (Fig. 3-2).
L	45-1/4"	Center of 7/8" master gage hole in compartment side rail to a point at inboard lower edge of same side rail on centerline of shackle bolt hole (Fig. 3-2).
M	43-9/16"	Between inboard lower edges of compartment side rails on centerline of shackle bolt hole (Fig. 3-2).
N	38"	Between centers of rear bumper lower inner attaching bolt holes.

VERTICAL DIMENSIONS - "F" BODIES (Fig. 3-1)

Fig. Ref.	Dimension	Location
a	9-11/16"	Rear edge at centerline of 1-5/16" hole in lower surface of rail directly below radiator support mounting location.
b	9-1/16"	5/8" master gage hole in frame adjacent to No. 1 body mount.

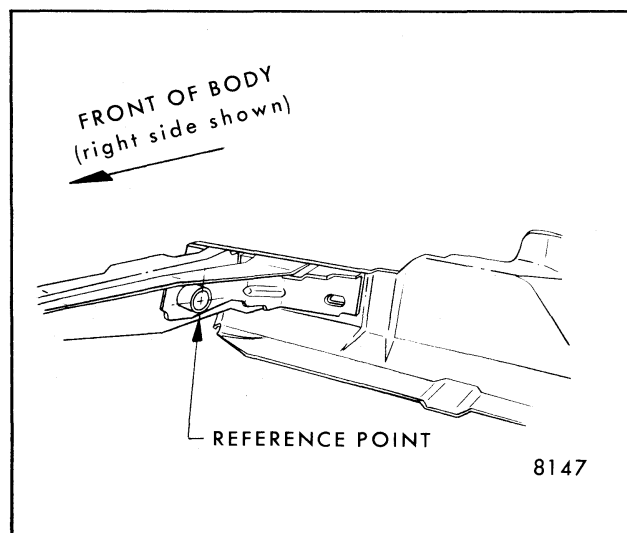


Fig. 3-2 Side Rail at Rear Spring Shackle Bushing - "F" Bodies

Fig. Ref.	Dimension	Location
c	9-15/16"	5/8" master gage hole in body adjacent to No. 1 body mount.
d	3-9/16"	No. 2 bar adjacent to No. 2 body bolt.
e	7/8"	Compartment side rail adjacent to 7/8" master gage hole.
f	13-3/4"	Lower horizontal surface of compartment side rail above rear axle housing.
g	10-1/4"	Lower surface of compartment side rail at centerline of shackle bolt hole (see Fig. 3-2).

HORIZONTAL DIMENSIONS - "X" BODIES (Fig. 3-3)

Fig. Ref.	Dimension	Location
A	31-3/4"	Between centers of front stabilizer bar "U" bracket front attaching holes.
B	33-1/16"	Center of front stabilizer bar "U" bracket front attaching hole and center of master gage hole adjacent to No. 1 body mount on same side of body.

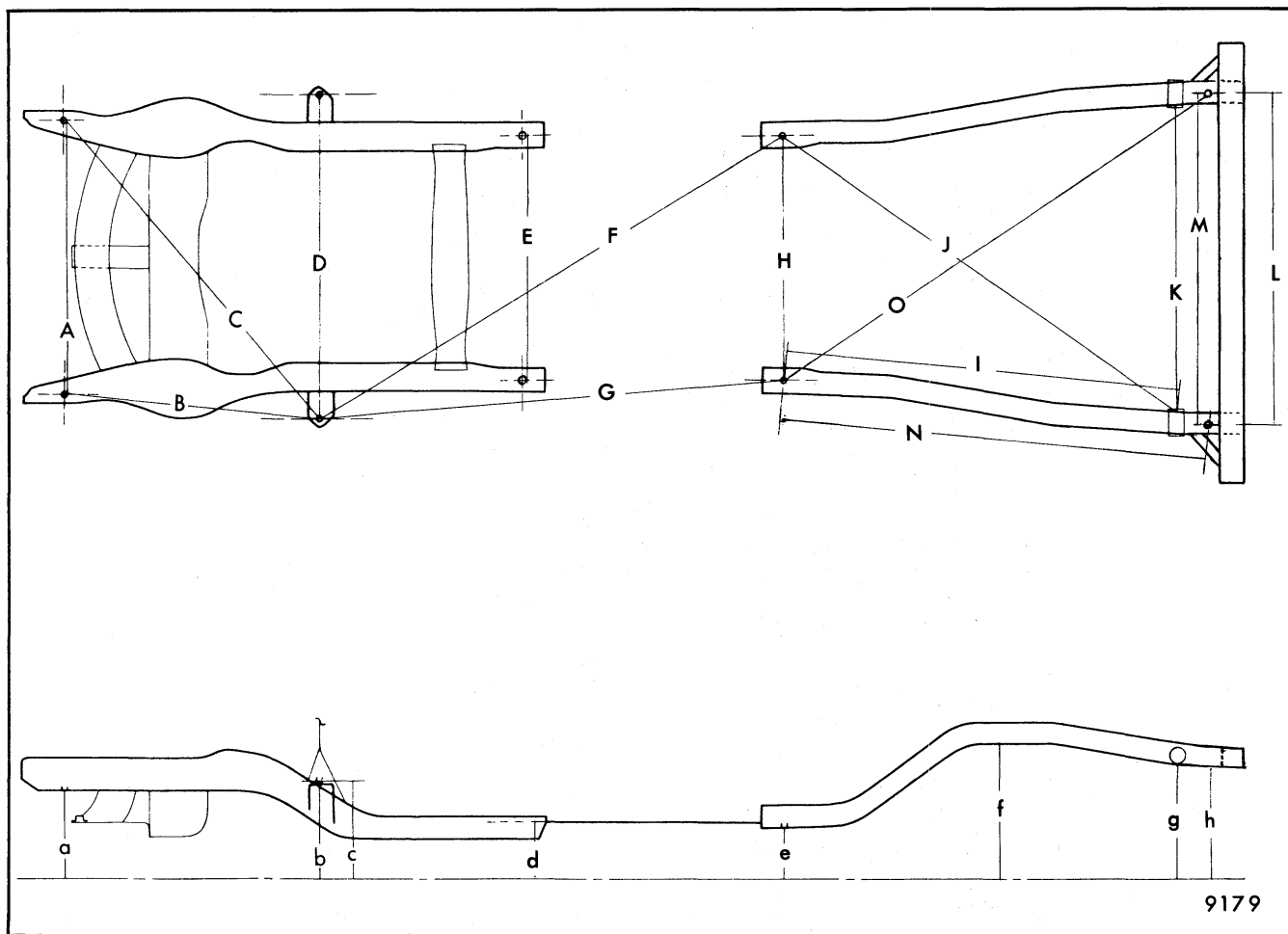


Fig. 3-3-Horizontal and Vertical Checking Dimensions - "X" Bodies

Fig. Ref.	Dimension	Location	Fig. Ref.	Dimension	Location
C	50-1/16"	Center of front stabilizer bar "U" bracket front attaching hole and center of master gage hole adjacent to No. 1 body mount on opposite side of body.	H	33-11/32"	Between centers of 5/8" master gage holes in compartment side rails.
D	44-9/16"	Center of master gage hole adjacent to No. 1 body mount.	I	54-7/8"	Center of 5/8" master gage hole in side rail and a point at inboard edge of same side rail at centerline of shackle bolt hole (Fig. 3-4).
E	33-3/4"	Rear edge at centerline of No. 2 body mount bolt hole.	J	66-9/16"	Center of 5/8" master gage hole in side rail and a point at inboard edge of opposite side rail at centerline of shackle bolt hole (Fig. 3-4).
F	79-1/16"	Center of master gage hole adjacent to No. 1 body mount and center of master gage hole in side rail on opposite side of body.	K	42-3/4"	Between inboard lower edges of compartment side rails on centerline of shackle bolt hole (see Fig. 3-4).
G	69"	Center of master gage hole adjacent to No. 1 body mount and center of master gage hole in side rail on same side of body.	L	40-1/4"	Center of rear bumper lower attaching bolts.

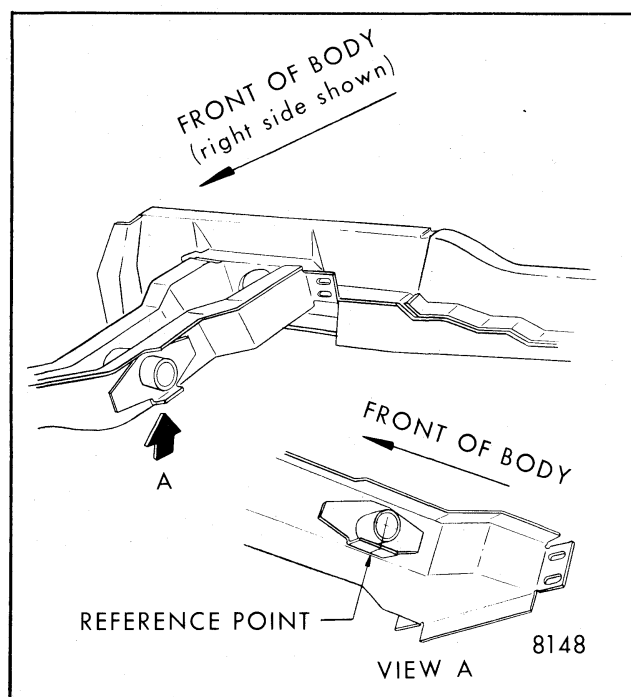


Fig. 3-4-Side Rail at Rear Spring Rear Shackle Bushing - "X" Bodies

Fig. Ref.	Dimension	Location
M	45"	Between centers of 11/16" hole in compartment side rails for rear bumper energy absorbing unit front attaching bolt.
N	61-7/16"	Center of 5/8" master gage hole in side rail and center of 11/16" hole for rear bumper energy absorbing unit front attaching bolt on same side of body.
O	72-3/8"	Center of 5/8" master gage hole in side rail and center of 11/16" hole for rear bumper energy absorbing unit front attaching bolt on opposite side of body.

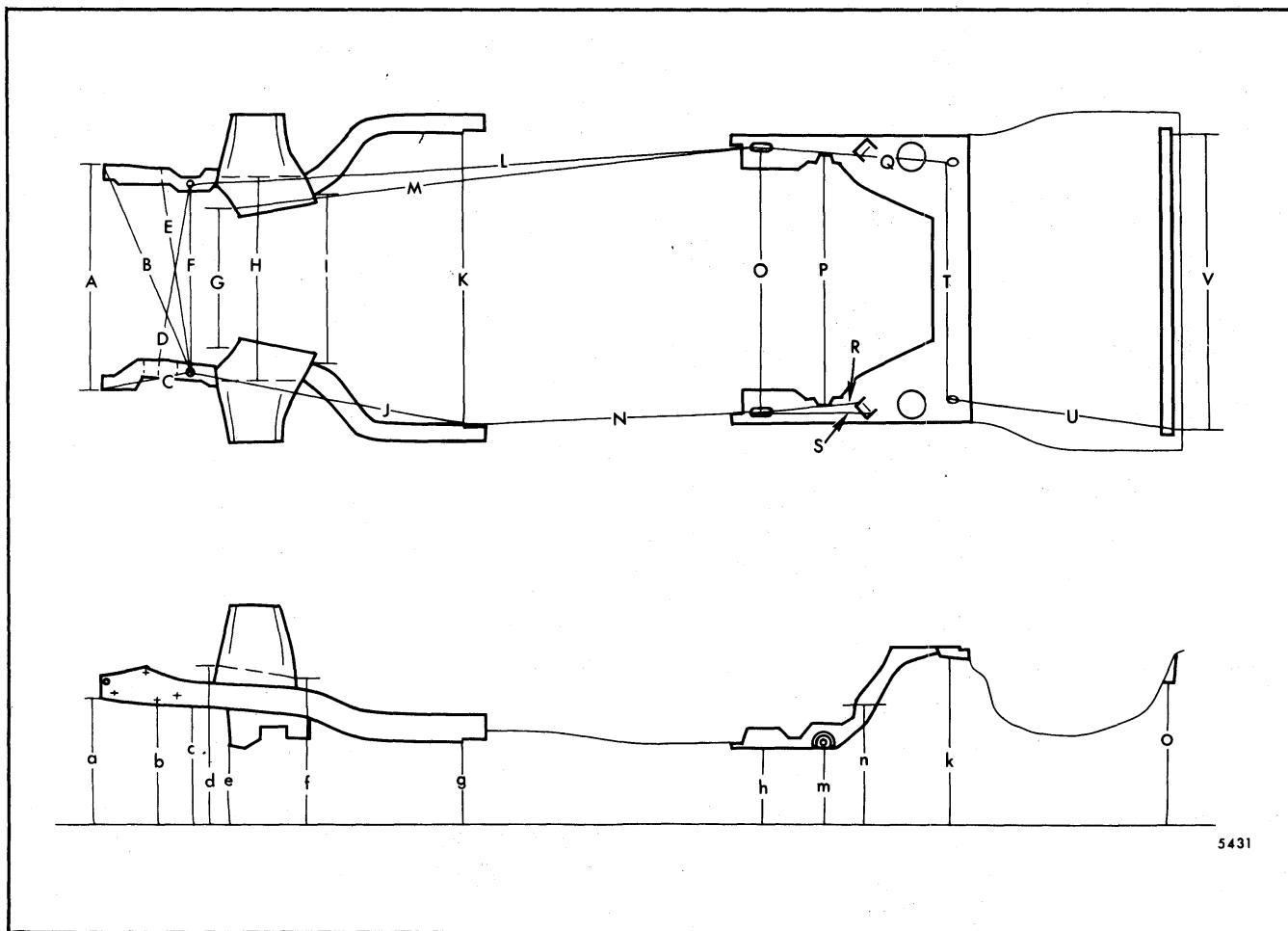
VERTICAL DIMENSIONS - "X" BODIES (Fig. 3-3)

Fig. Ref.	Dimension	Location
a	5-5/32"	Front stabilizer bar "U" bracket front attaching hole or center of bolt head.

Fig. Ref.	Dimension	Location
b	10-15/16"	Master gage hole adjacent to No. 1 body mount in frame.
c	11-13/16"	Master gage hole adjacent to No. 1 body mount on body.
d	3-21/32"	No. 2 bar adjacent to No. 2 body mount bolt cage nut.
e	1-7/8"	5/8" master gage hole in side rail.
f	13-7/16"	Lower surface of side rail at kick-up either side of rear axle housing.
g	9-21/32"	Lower surface of side rail at centerline of shackle bolt hole (see Fig. 3-4).
h	9-3/32"	Lower surface of side rail at 11/16" hole for rear bumper energy absorbing unit front attaching bolt.

HORIZONTAL DIMENSIONS - "H" BODIES - "11-15-77" Styles (Fig. 3-5)

Fig. Ref.	Dimension	Location
A	33-1/4"	Between leading outboard surfaces of front side rails.
B	33-1/4"	From center of 3/4" master gage hole in lower surface of front rail (approximately 4" forward of shock absorber housing) to leading outboard lower edge of opposite side rail.
C	12-5/8"	From center of 3/4" master gage hole in front side rail to leading outboard lower edge of same rail.
D	26-9/16"	From center of 3/4" master gage hole in right hand front rail to inboard surface of left hand front rail at steering gear forward lower mounting bolt hole (see Fig. 3-7).
E	28"	From center of 3/4" master gage hole in left hand front rail to inboard surface of right hand front rail at steering idler arm lower bolt hole (see Fig. 3-6).



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Fig. 3-5-Horizontal and Vertical Checking Dimensions - "H-11-15-77" Styles

Fig. Ref.	Dimension	Location	Fig. Ref.	Dimension	Location
		NOTE: Reference points at steering gear and idler arm locations are NOT of equal distance from the vehicle centerline.			(forward surface) in shock absorber housing (see Fig. 3-6).
F	27-3/4"	Between centers of 3/4" master gage holes in front rails.	J	40-15/16"	From center of 3/4" master gage hole in front rail to lower corner of step near the rear of same rail (see Fig. 3-6).
G	21-7/16"	Between centers of lower front suspension attaching bolt holes in shock absorber housing (see Fig. 3-6).	K	42-3/4"	Between front rails at lower corner of step (see Fig. 3-6).
H	30-1/4"	Between centers of either front or rear upper suspension attaching bolt holes in shock absorber housing (see Fig. 3-6).	L	83-1/16"	From center of 3/4" master gage hole in front rail to forward end of oblong shipping hook hole in rear rail on same side of body.
I	25"	Between centers of lower rear suspension attaching bolt holes	M	77-1/4"	From front lower surface of shock absorber housing, centered on suspension lower front attaching bolt hole to forward end of the oblong shipping hook hole in rear

Fig. Ref.	Dimension	Location	Fig. Ref.	Dimension	Location
		rail on same side of body (see Fig. 3-7).	Q	28-3/4"	From the forward end of the oblong shipping hook hole in rear rail to forward edge on center of 1-1/2" oblong hole in floor pan reinforcement at rear spring on same side of body.
N	43"	From lower corner of step at rear of front rail to forward end of the oblong shipping hook hole in rear rail on same side of body (see Fig. 3-6).	R	16-5/8"	From the forward end of the oblong shipping hook hole in rear rail to outboard surface of inboard portion of the upper suspension mounting bracket on same side of body (see Fig. 3-8).
O	37-1/2"	Between centers of oblong shipping hook holes in rear rails.			
P	36-1/16"	Between inboard surfaces of rear lower suspension arm mounting locations in rear rails (see Fig. 3-8).	S	17-7/8"	From the forward end of the oblong shipping hook hole in rear rail to inboard surface of

Fig. Ref.	Dimension	Location	Fig. Ref.	Dimension	Location
		rail on same side of body (see Fig. 3-7).	Q	28-3/4"	From the forward end of the oblong shipping hook hole in rear rail to forward edge on center of 1-1/2" oblong hole in floor pan reinforcement at rear spring on same side of body.
N	43"	From lower corner of step at rear of front rail to forward end of the oblong shipping hook hole in rear rail on same side of body (see Fig. 3-6).	R	16-5/8"	From the forward end of the oblong shipping hook hole in rear rail to outboard surface of inboard portion of the upper suspension mounting bracket on same side of body (see Fig. 3-8).
O	37-1/2"	Between centers of oblong shipping hook holes in rear rails.			
P	36-1/16"	Between inboard surfaces of rear lower suspension arm mounting locations in rear rails (see Fig. 3-8).	S	17-7/8"	From the forward end of the oblong shipping hook hole in rear rail to inboard surface of

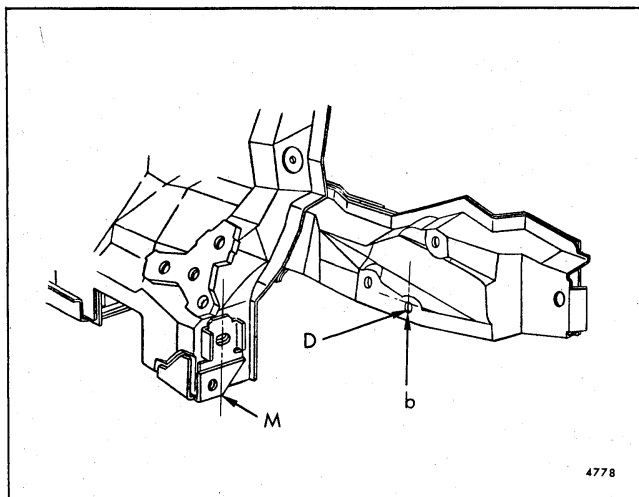


Fig. 3-7-Reference Points at Left Front Rail - All "H" Styles

Fig.
Ref. Dimension Location

outboard portion of the upper suspension mounting bracket on same side of body (see Fig. 3-8).

T 35" Between forward edge on center of 1-1/2" oblong holes in floor pan pan reinforcements at rear springs.

U 29-5/8" From forward edge on center of 1-1/2" oblong hole in floor pan reinforcement at rear spring to centerline of the 5/8" lower outboard bumper attaching holes (see Fig. 3-9).

V 49 1/8" Between centers of the outboard 5/8" rear bumper attaching holes in rear cross bar (see Fig. 3-9).

VERTICAL DIMENSIONS - "H" BODIES - "11-15-77" Styles (Fig. 3-5)

Fig.
Ref. Dimension Location

a 6-7/8" Leading outboard lower edge of side rail (see Fig. 3-6).

b. 7-13/16" Left side - center of steering gear lower forward attaching bolt hole (see Fig. 3-7).

9-7/16" Right side - center of steering idler arm lower attaching bolt hole (see Fig. 3-6).

Fig.
Ref. Dimension Location

c 7-1/8" Left side - lower surface of front rail adjacent to 3/4" master gage hole.

7-1/2" Right side - (same location as above).

d 12-5/8" Center of upper front suspension attaching location on shock absorber housing (see Fig. 3-6).

e 1-5/16" From front lower surface of shock absorber housing, centered on suspension lower front attaching bolt hole (see Fig. 3-6).

f 11" Center of upper rear suspension attaching location on shock absorber housing (see Fig. 3-6).

g 1-1/16" Lower corner of step near end of front side rail (see Fig. 3-6).

h 1-9/16" Lower surface of rear rail adjacent to forward end oblong shipping hook hole.

k 15-5/16" Lower surface of floor pan reinforcement at rear spring adjacent to 1-1/2" oblong hole.

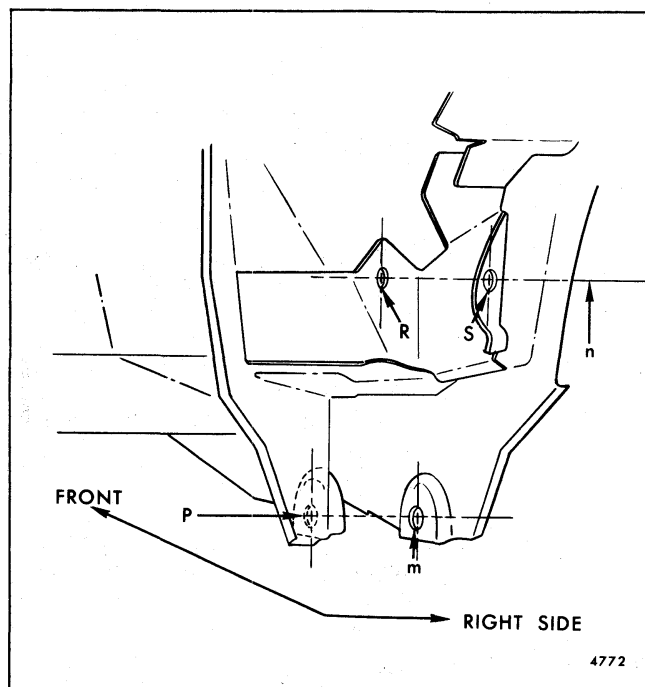


Fig. 3-8-Reference Points at Rear Suspension Area - "H-11-15-77" Styles

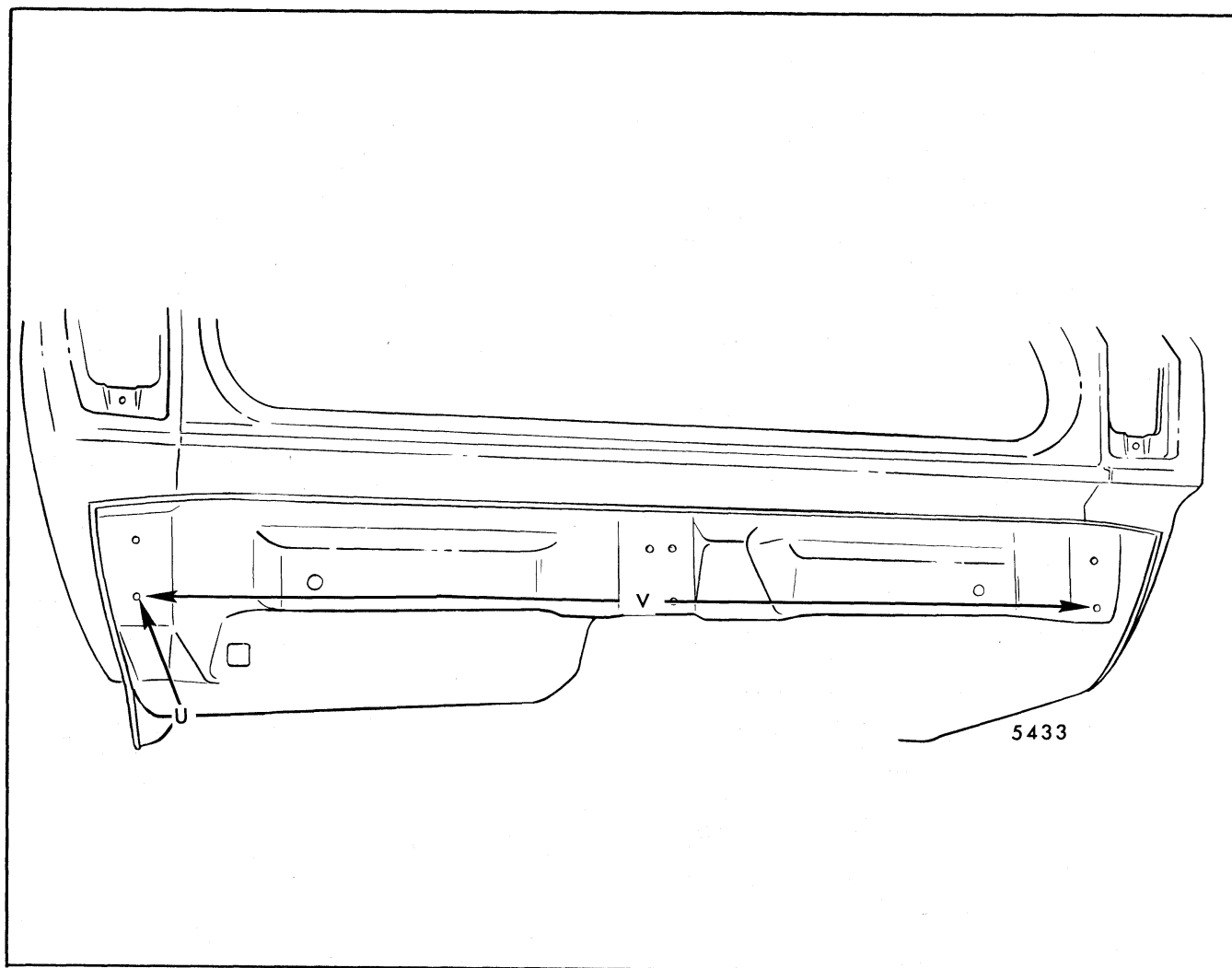


Fig. 3-9-Reference Points at Rear Cross Bar - "H-11-15-77" Styles

Fig. Ref.	Dimension	Location
m	1-3/4"	Center of rear suspension lower control arm mounting location (see Fig. 3-8).
n	7-5/8"	Center of rear suspension upper control arm mounting location (see Fig. 3-8).
o	9-1/16"	Lower surface of rear cross bar at center line of lower outboard bumper attaching 5/8" hole.

HORIZONTAL DIMENSIONS - "H" BODY - "07" Style (Fig. 3-10)

Fig. Ref.	Dimension	Location
A	33-1/4"	Between leading outboard surfaces of front side rails.

Fig. Ref.	Dimension	Location
B	33-1/4"	From center of 3/4" master gage hole in lower surface of front rail (approximately 4" forward of shock absorber housing) to leading outboard lower edge of opposite side rail.
C	12-5/8"	From center of 3/4" master gage hole in front side rail to leading outboard lower edge of same rail.
D	26-9/16"	From center of 3/4" master gage hole in right hand front rail to inboard surface of left hand front rail at steering gear forward lower mounting bolt hole (see Fig. 3-7).
E	28"	From center of 3/4" master gage hole in left hand front rail to inboard surface of right hand front rail.

3-10 UNDERBODY

Fig. Ref.	Dimension	Location
		rail at steering idler arm lower bolt hole (see Fig. 3-6).
		NOTE: Reference points at steering gear and idler arm locations are NOT of equal distance from the vehicle centerline.
F	27-3/4"	Between centers of 3/4" master gage holes in front rails.
G	21-7/16"	Between centers of lower front suspension attaching bolt holes in shock absorber housing (see Fig. 3-6).
H	30-1/4"	Between centers of either front or rear upper suspension attaching bolt holes in shock absorber housing (see Fig. 3-6).
I	25"	Between centers of lower rear suspension attaching bolt holes (forward surface) in shock absorber housing (see Fig. 3-6).
J	40-15/16"	From center of 3/4" master gage hole in front rail to lower corner of step near the rear of same rail (see Fig. 3-6).
K	42-3/4"	Between front rails at lower corner of step (see Fig. 3-6).
L	83-1/16"	From center of 3/4" master gage hole in front rail to forward end of oblong shipping hook hole in rear rail on same side of body.
M	77-1/4"	From front lower surface of shock absorber housing, centered on suspension lower front attaching bolt hole to forward end of the oblong shipping hook hole in rear rail on same side of body (see Fig. 3-7).
N	43"	From lower corner of step at rear of front rail to forward end of the oblong shipping hook hole in rear rail on same side of body (see Fig. 3-6).
O	37-5/8"	Between centers of oblong shipping hook holes in rear rails.

Fig. Ref.	Dimension	Location
P	36-1/4"	Between inboard surfaces of rear lower suspension arm mounting locations in rear rails (see Fig. 3-8).
Q	29-3/32"	From the forward end of the oblong shipping hook hole in rear rail to forward edge of center of 1-1/2" oblong hole in floor pan reinforcement at rear spring on same side of body.
T	32-55/64"	Between forward edge on center of 1-1/2" oblong holes in floor pan reinforcements at rear springs.
U	30-7/8"	From forward edge on center of 1-1/2" oblong hole in floor pan reinforcement at rear spring to centerline of the 5/8" lower outboard bumper attaching holes (see Fig. 3-11).
V	28-3/4"	Between centers of the outboard 5/8" rear bumper attaching holes in rear cross bar (see Fig. 3-11).

VERTICAL DIMENSIONS - "H" BODY - "07" Style (Fig. 3-10)

Fig. Ref.	Dimension	Location
a	6-7/8"	Leading outboard lower edge of side rail (see Fig. 3-6).
b	7-13/16"	Left side - center of steering gear lower forward attaching bolt hole (see Fig. 3-7).
	9-7/16"	Right side - center of steering idler arm lower attaching bolt hole (see Fig. 3-6).
c	7-1/8"	Left side - lower surface of front rail adjacent to 3/4" master gage hole.
	7-1/2"	Right side - same location as above.
d	12-5/8"	Center of upper front suspension attaching location on shock absorber housing (see Fig. 3-6).

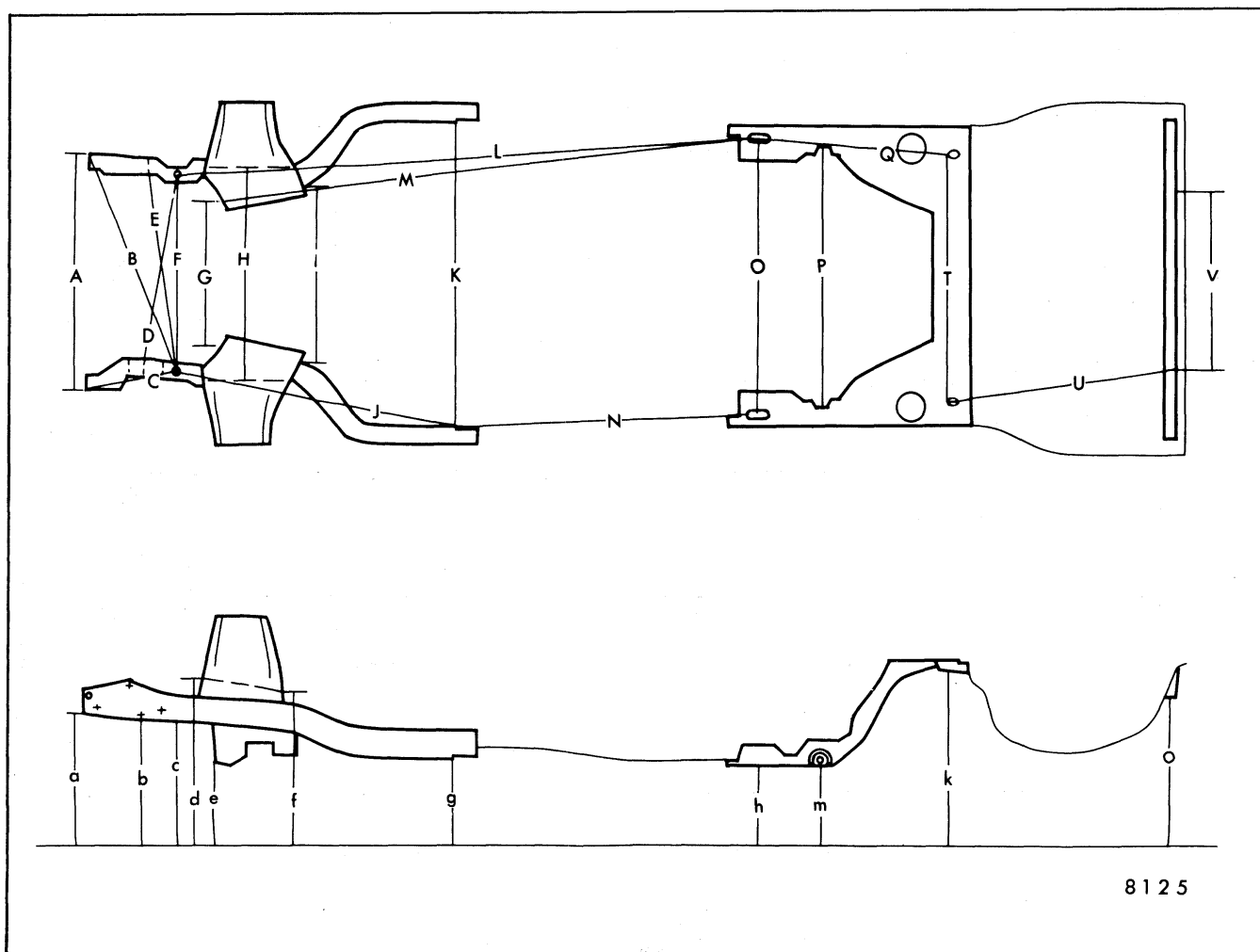


Fig. 3-10-Horizontal and Vertical Checking Dimensions - "H-07" Styles

Fig. Ref.	Dimension	Location	Fig. Ref.	Dimension	Location
e	1-5/16"	From front lower surface of shock absorber housing, centered on suspension lower front attaching bolt hole (see Fig. 3-6).	k	15-5/16"	Lower surface of floor pan reinforcement at rear spring adjacent to 1-1/2" oblong hole.
f	11"	Center of upper rear suspension attaching location on shock absorber housing (see Fig. 3-6).	m	1-3/4"	Center of rear suspension lower control arm mounting location (see Fig. 3-8).
g	1-1/16"	Lower corner of step near end of front side rail (see Fig. 3-6).	n	7-9/32"	Center of rear suspension upper control arm mounting location (see Fig. 3-8).
h	1-9/16"	Lower surface of rear rail adjacent to forward end oblong shipping hook hole.	o	10-21/64"	Lower surface of rear cross bar at centerline of lower outboard bumper attaching 5/8" hole.

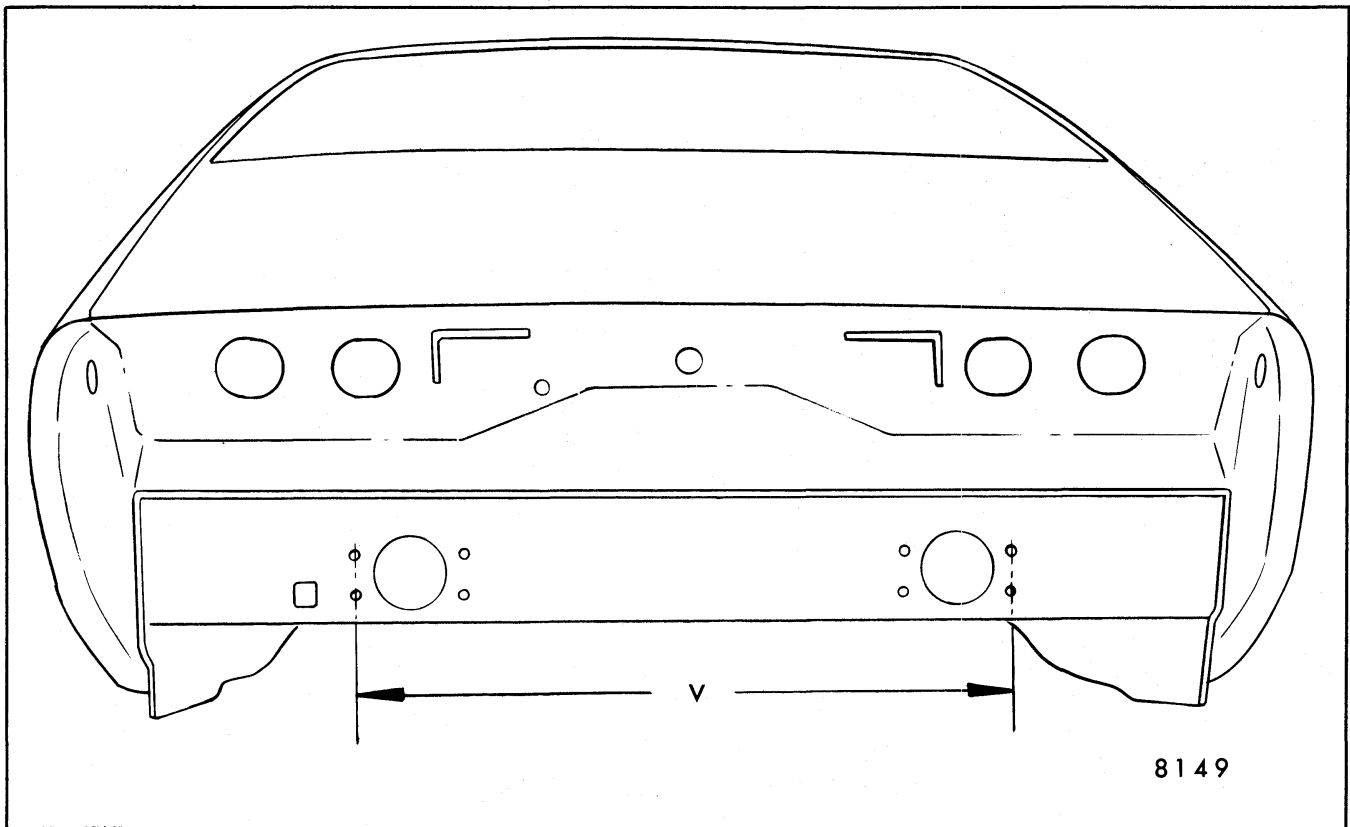


Fig. 3-11-Reference Points at Rear Cross Bar - "H-07" Styles

FLOOR PAN INSULATORS

Floor pan insulators have been designed specifically for the higher floor pan temperatures that result from the use of the catalytic converter in the exhaust system. Therefore, when servicing a vehicle in the field, it is essential that any insulators that may have been disturbed or removed be reinstalled in the original sequence and location. Also, if it becomes necessary to replace an insulator, the proper material specified for that particular location on the floor pan must be used.

The type of materials are listed below. Refer to following figures for the type of material specified for each area.

1. Insulator floor pan (Cerra Blanket thermal) - consists of 3/8 inch thick Aluminum Silica (Type 1).
2. Insulator floor pan (Amberlite) - consists of 3/8 inch thick Resinated Fibers (Type 2).

NOTE: The above parts are 48" wide; order by linear foot and cut to fit.

3. Insulator floor pan (Phenolic Bonded Fiber Glass) cut to size (12" x 18") (Type 3).

NOTE: All of the above materials must meet Motor Vehicle Safety Standard No. 302 for flammability.

When servicing or replacing interior insulators, the following instructions must be observed.

1. Insulators must be installed in the original position and sequence. Pieces should be butted together properly in order to avoid gapping or overlapping.
2. If it becomes necessary to replace an insulator, it is essential that the specified material be used.
3. Use original part to determine the amount of replacement material required and as a template for cutting and fitting the new piece to the floor pan.

4. When installing insulator do not enlarge cut-outs or holes that are used for the attachment of interior components such as seats or seat belts.
5. Cross body harnesses for interior components such as power seats, electric seat back locks, lap belt warning light and buzzer, or rear speakers must be routed over the floor pan insulators in the original location and properly clipped in place.
6. Spray-on deadeners and trim adhesives should not be applied to the top of the floor pan at area directly over the catalytic converter or muffler(s).

NOTE: The following insulator locations are typical for styles indicated; however, any insulator service repair or replacement should be the same thickness, size and location as original installation in car.

FLOOR CARPET

The "A, B, C, D and E" style floor carpet consists of a molded one piece front and a one piece rear carpet over the front and rear floor pan. The "F, H and X" style floor carpet consists of a molded one piece carpet over both front and rear floor pan. To remove or install carpet, it will be necessary to remove front seat assembly, rear seat cushion and front and rear door sill plates.

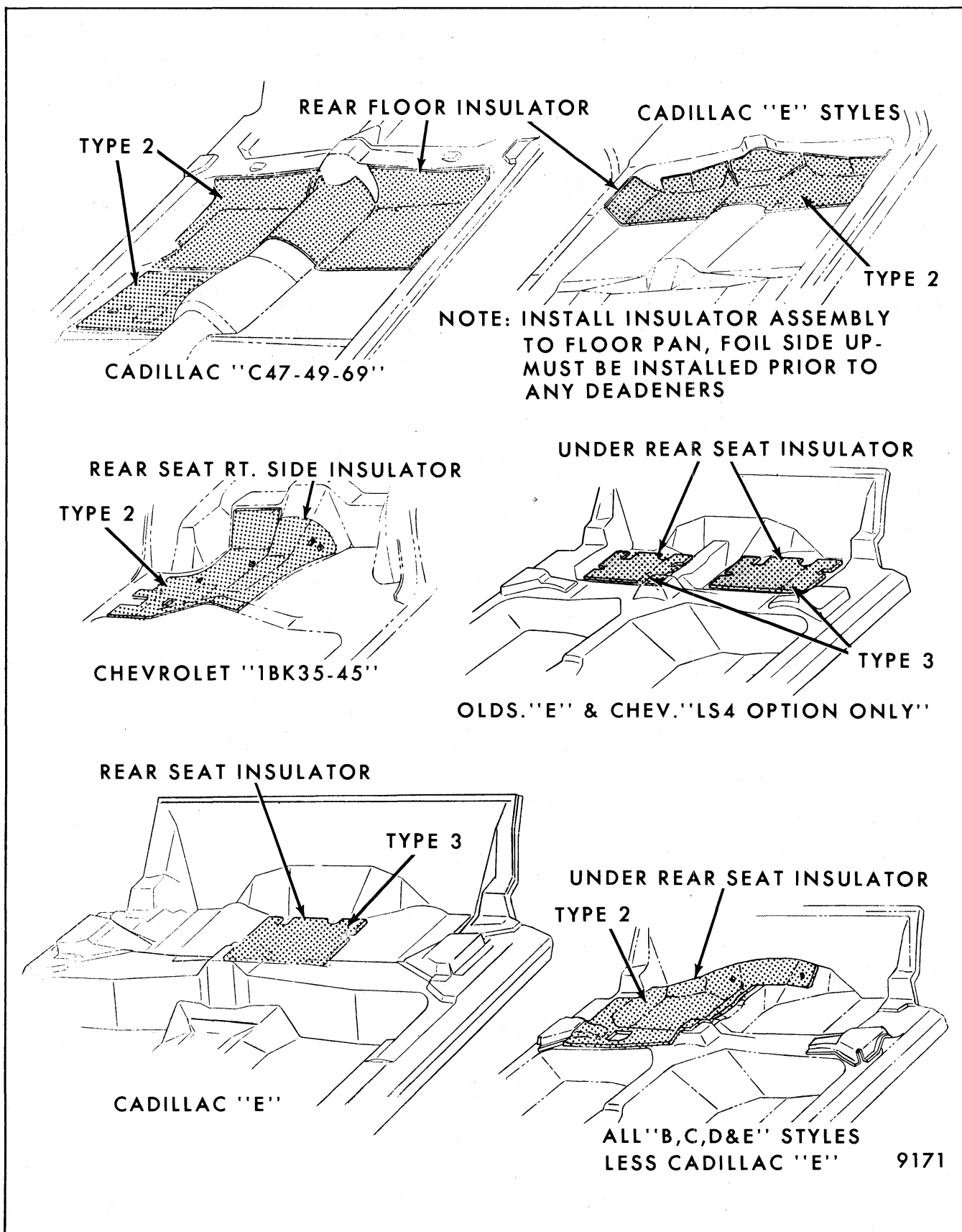


Fig. 3-12-Rear Floor and Rear Seat Pan Insulators

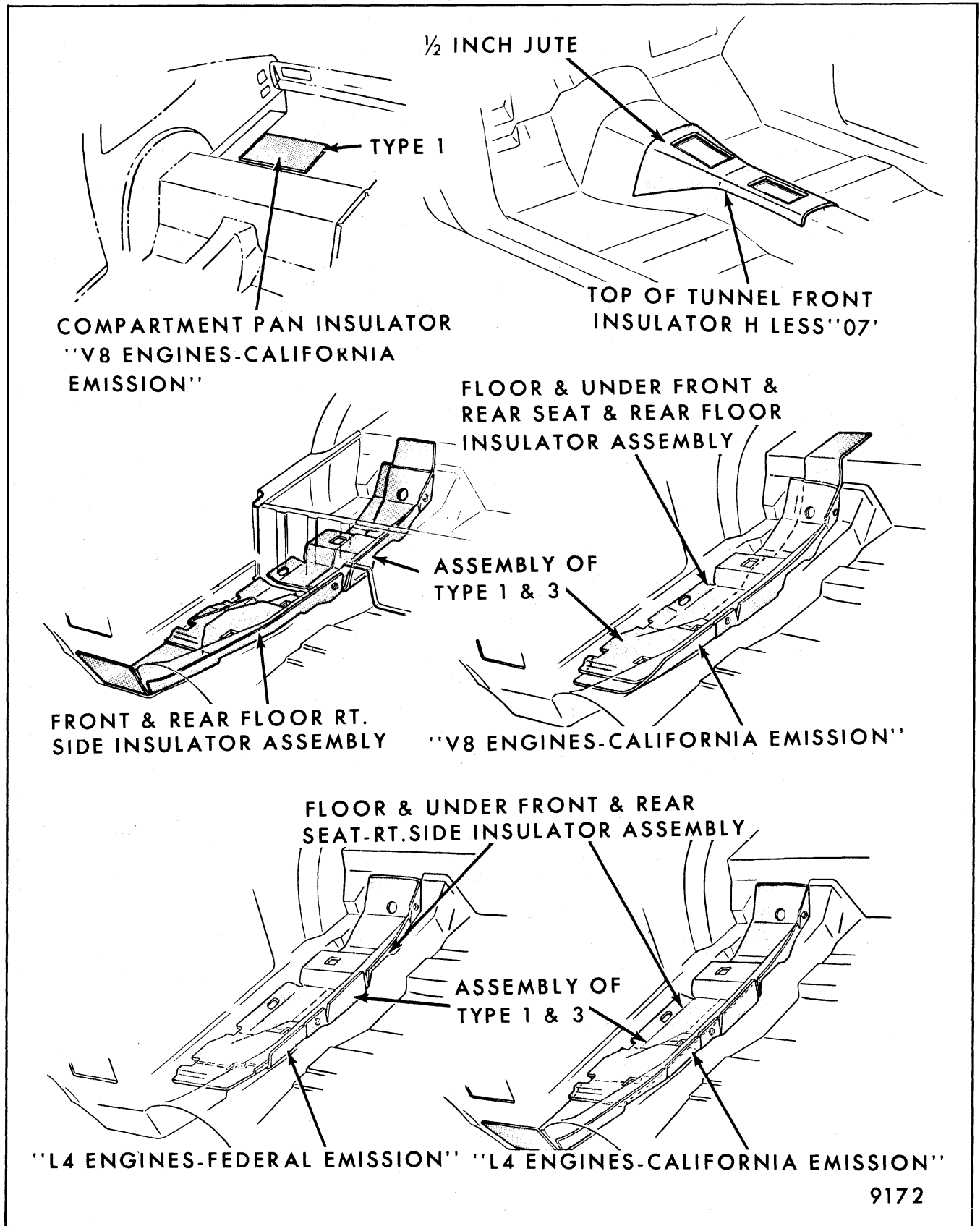


Fig. 3-13-Floor, Under Front and Rear Seat and Compartment Pan Insulators - "H" Styles

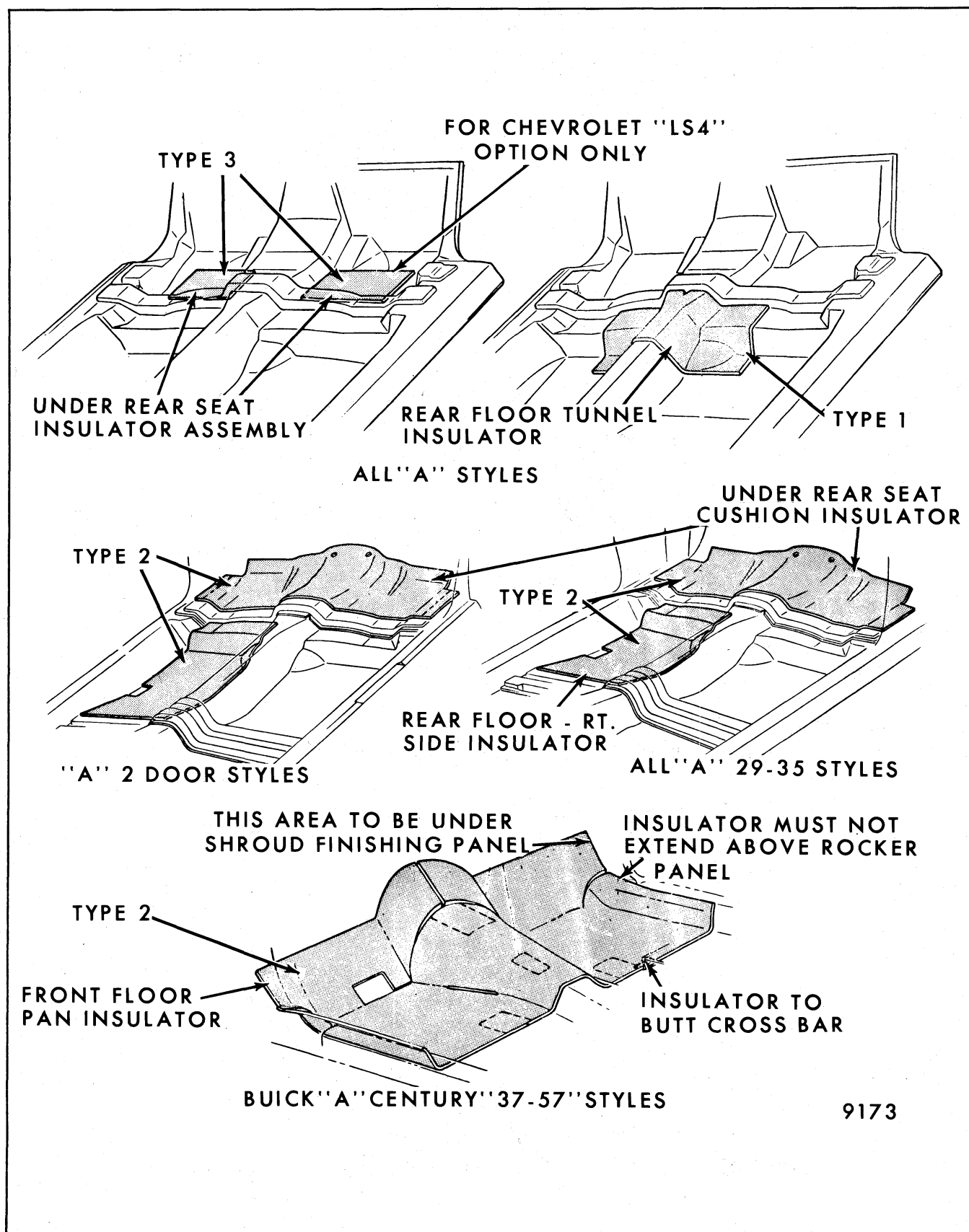


Fig. 3-14-Front and Rear Floor and Under Rear Seat Insulators - "A" Styles

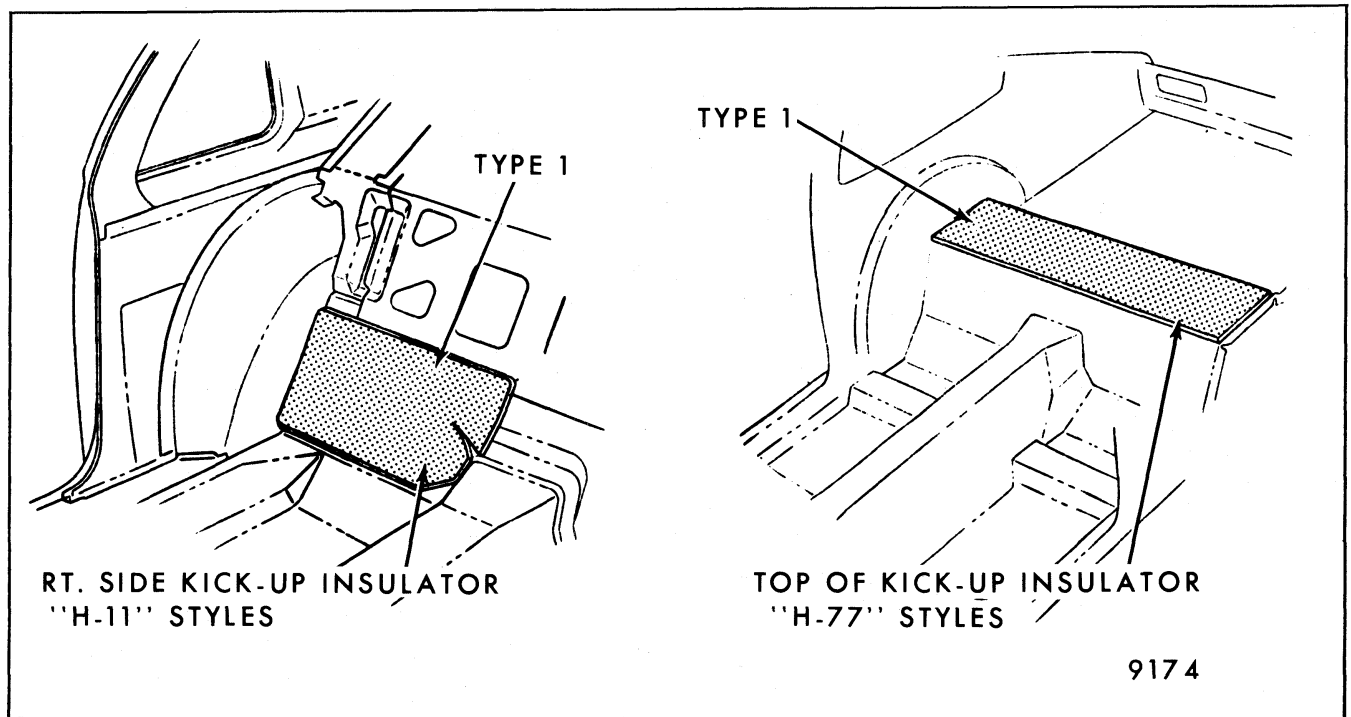


Fig. 3-15-Compartment Pan Kick-up Insulator - "H-11, 77" Styles

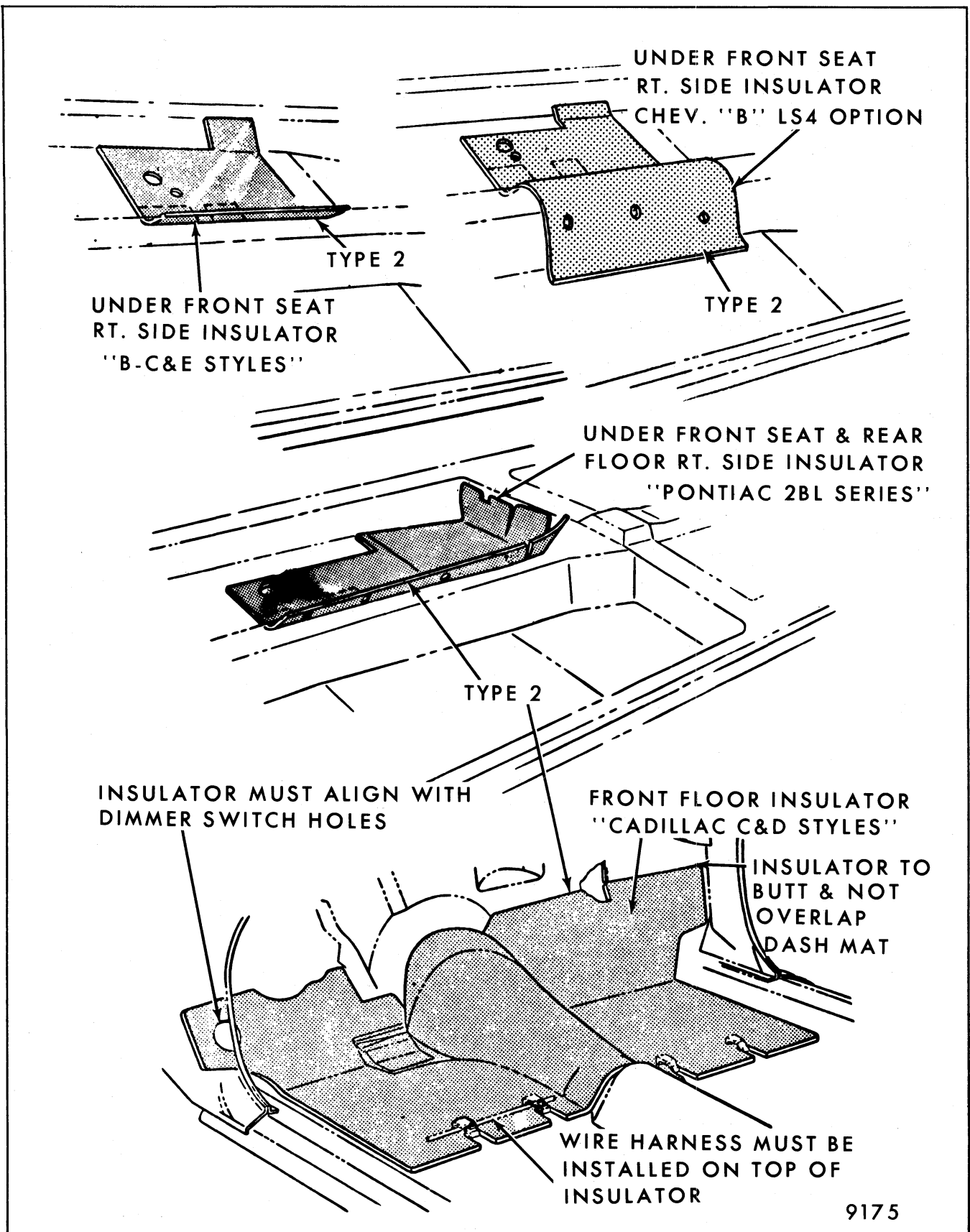


Fig. 3-16-Front and Rear Floor Insulators

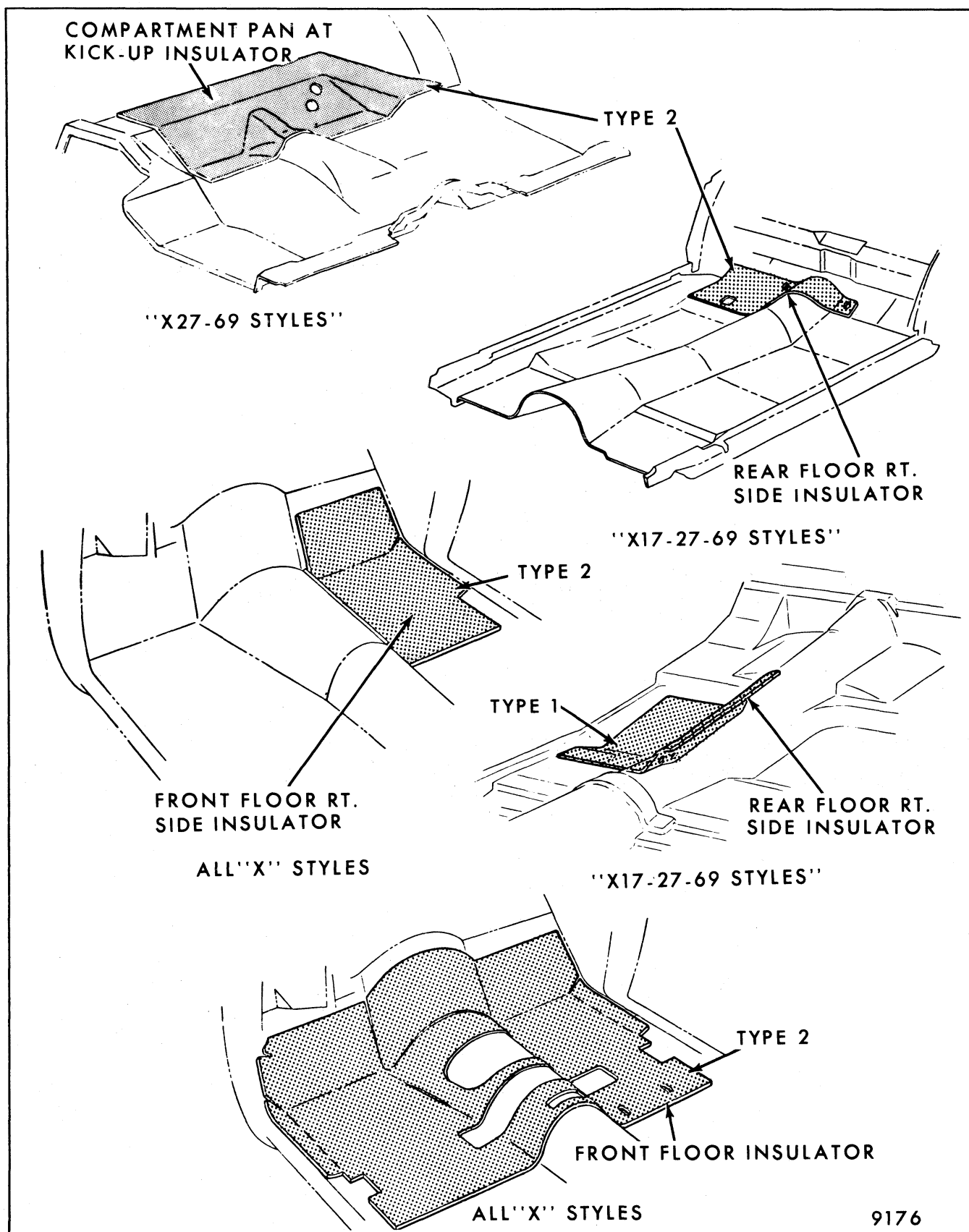


Fig. 3-17-Front and Rear Floor and Compartment Pan at Kick-up Insulators - "X" Styles

SECTION 4

FRONT END

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BODY VENTILATION

DESCRIPTION (Non-Air Conditioned Styles)

Body ventilation systems on non-air conditioned styles are comprised of a low-level system, or a combination of a low-level and a high-level system depending upon body style.

All body styles are furnished with a fresh air intake at the front plenum chamber. On "F-H-X" styles the low-level ventilation system consists of fresh air outlets in each shroud side panel and is standard equipment on all styles. On "A-B-C-E" styles, the low-level system air outlets are located in the lower wall of the right shroud vent side duct panel and the lower wall at left end of shroud vent duct center panel (Fig. 4-1).

The body ventilation system on "H" body non-air conditioned styles is comprised of only a low-level system.

The fresh air intake is located at the front plenum chamber. In addition to the plenum chamber, the ventilation system consists of:

1. Duct openings in right and left shroud side panels (Fig. 4-7).
2. Integral air duct outlet in right and left shroud side finishing panels. Each duct outlet is equipped with a door and control cable (Fig. 4-6).

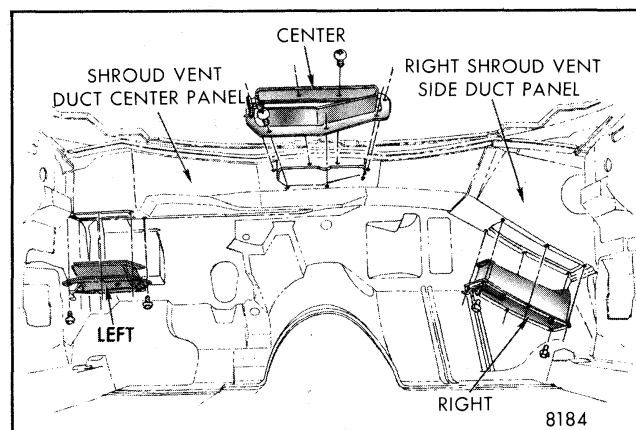


Fig. 4-1-Air Duct Outlet Locations - "A-B-C-E" Styles

3. Air exhaust louvers in each quarter outer panel on "H-15" styles.

The high-level ventilation system is standard equipment on all "A-B-C-E-F" styles.

High-level ventilation systems include the following components:

1. High-level air outlet(s) on instrument panel.
2. Pressure relief valves (air exhaust outlets) on rear body lock pillars.

NOTE: For instructions on operation of the body ventilation system, refer to the "Owner's Manual".

Ventilating air enters the front plenum chamber through an air intake grille and/or screen. Air is directed through plenum chamber to high-level air outlet door(s) and/or to low-level air outlet doors. When ventilation controls are operated, air enters past respective doors and into body.

On styles with high-level ventilation, air passes through the body, around the rear seat, and into the rear compartment. The air then passes into the rear quarters and leaves the body passing through the pressure relief valves located on the rear body lock pillars (Figs. 4-14 and 4-15).

Water entering front plenum chamber on "F-X" styles is channeled to base of shroud side panels where it is drained through openings provided for that purpose. On "A-B-C-E" styles water is channeled to outboard ends of plenum chamber where it is discharged through flat deflection type drain valves.

On "H" body styles, water entering front plenum chamber is channeled around baffles to base of shroud panels and into rocker panels where it is drained to the outside through openings provided for that purpose.

SHROUD CENTER DUCT HIGH-LEVEL AIR OUTLET AND DOOR - "A-B-C-E" Styles

The outlet and door are shown in Figures 4-1 and 4-2.

To remove door from air duct outlet, disengage control cable from door and slide crank end of door from snap-in slot in duct assembly and remove door.

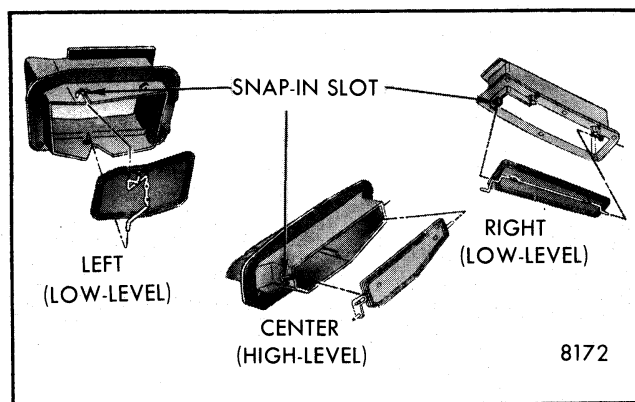


Fig. 4-2-High-Level and Low-Level Air Outlets and Doors - "B-C-E" Styles ("A" Styles Similar)

The high-level air duct outlet is sealed with a gasket at attaching flanges and is secured to center duct panel with screws.

NOTE: If gasket becomes damaged, duct outlet can be sealed to center duct panel with medium-bodied sealer.

LOW-LEVEL AIR DUCT OUTLET, DOOR AND GRILLE - "A-B-C-E" Styles

To remove grille from air duct outlet on "B-C-E" styles, remove grille to air outlet attaching screw(s). The left grille is retained by one screw and the right grille by two screws (Fig. 4-3). Disengage grille from retaining tabs on outlet and remove grille. On "A" styles, the left grille is retained by one screw and the right grille is an integral part of the air duct outlet. To install, reverse removal procedure.

To remove air outlet door, remove grille as previously described, remove control cable to door crank retainer and disengage control cable from crank (Fig. 4-4). Disengage crank end of door from snap-in slot of air outlet and remove door. To install, reverse removal procedure.

To remove air duct outlet, remove grille and disconnect control cable as previously described. Remove air duct outlet attaching screws and remove duct outlet assembly.

NOTE: In case of gasket damage, seal duct outlet to duct opening with medium-bodied sealer.

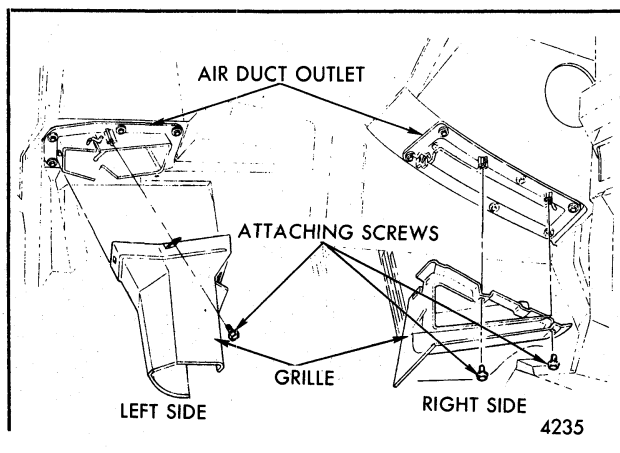


Fig. 4-3-Low-Level Air Outlet Grilles - "B-C-E" Styles ("A" Style Similar)

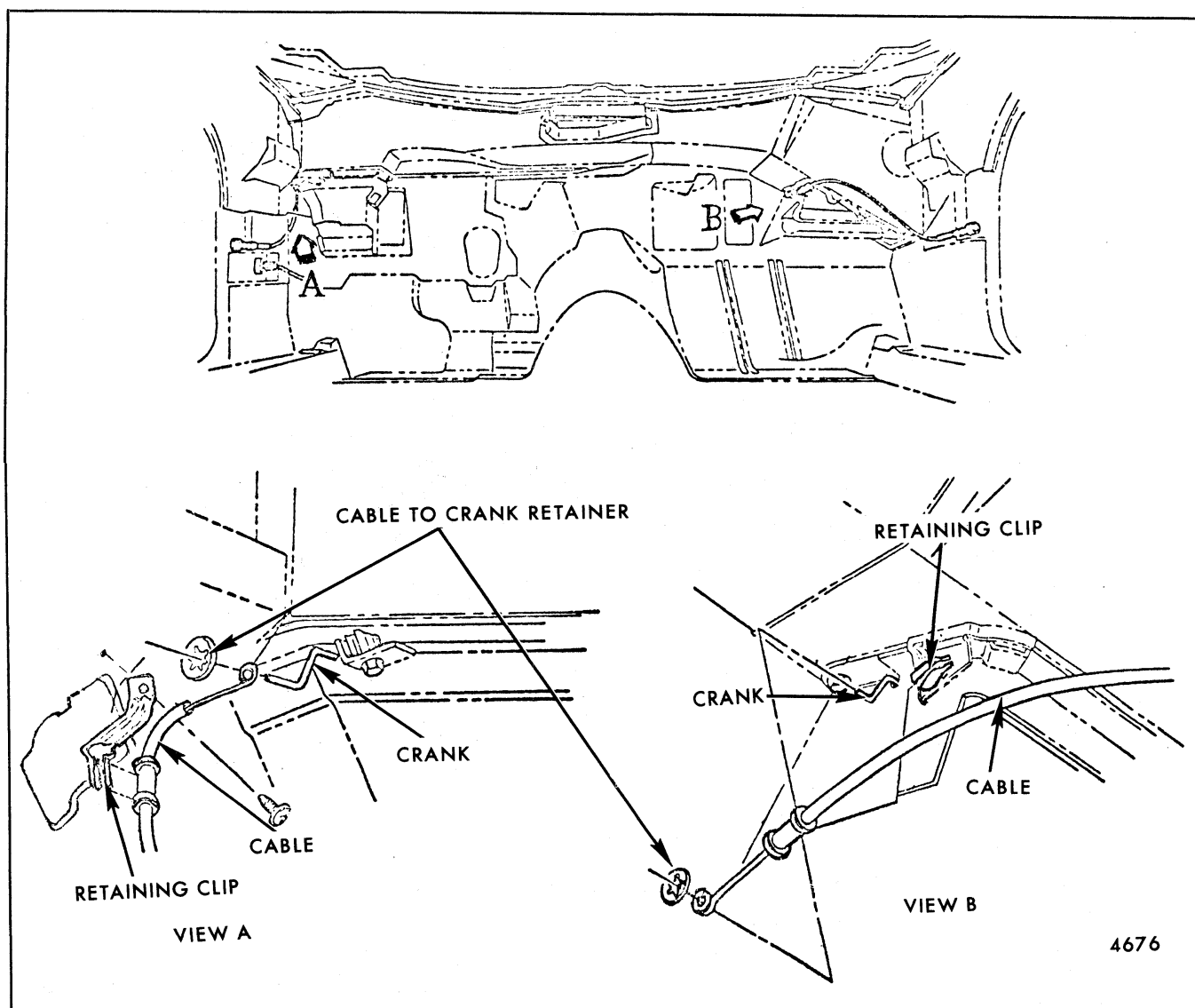


Fig. 4-4-Low-Level Air Outlet Control Cables

SHROUD CENTER DUCT HIGH-LEVEL AIR OUTLET AND DOOR - "F" Styles

The air duct outlet, door and control cable attachment is illustrated in Figure 4-5.

The door can be removed by removing retaining clip (Fig. 4-5), control cable from retaining clip and rotating control cable out of crank on door. Disengage snap-in type control rod from duct assembly and slide door out of duct opening.

To remove duct outlet, disengage control cable from door and remove duct outlet to center duct panel attaching screws. To install, reverse the removal procedure.

NOTE: In case of gasket damage, seal duct outlet to center duct panel with medium-bodied sealer.

SHROUD SIDE FINISHING PANEL - All Styles

On "F-X and H" styles, the shroud side finishing panel is designed with an integral air duct outlet and hinge pillar pinchweld finishing lace. The following are added to the finishing panel before installation: air outlet door and upper and/or lower vent control cables. The attaching flanges of the panel must be sealed to the contacting panel. If original seal is damaged or disturbed, apply medium-bodied sealer around attaching flanges (Fig. 4-11). The finishing panel is secured by screws at the side panel. A snap-in type grille completes the installation on "X" styles. The grille on "F and H" style is an integral part of the finishing panel.

Removal of the low-level air duct door and/or upper and lower vent control cable requires removal of the

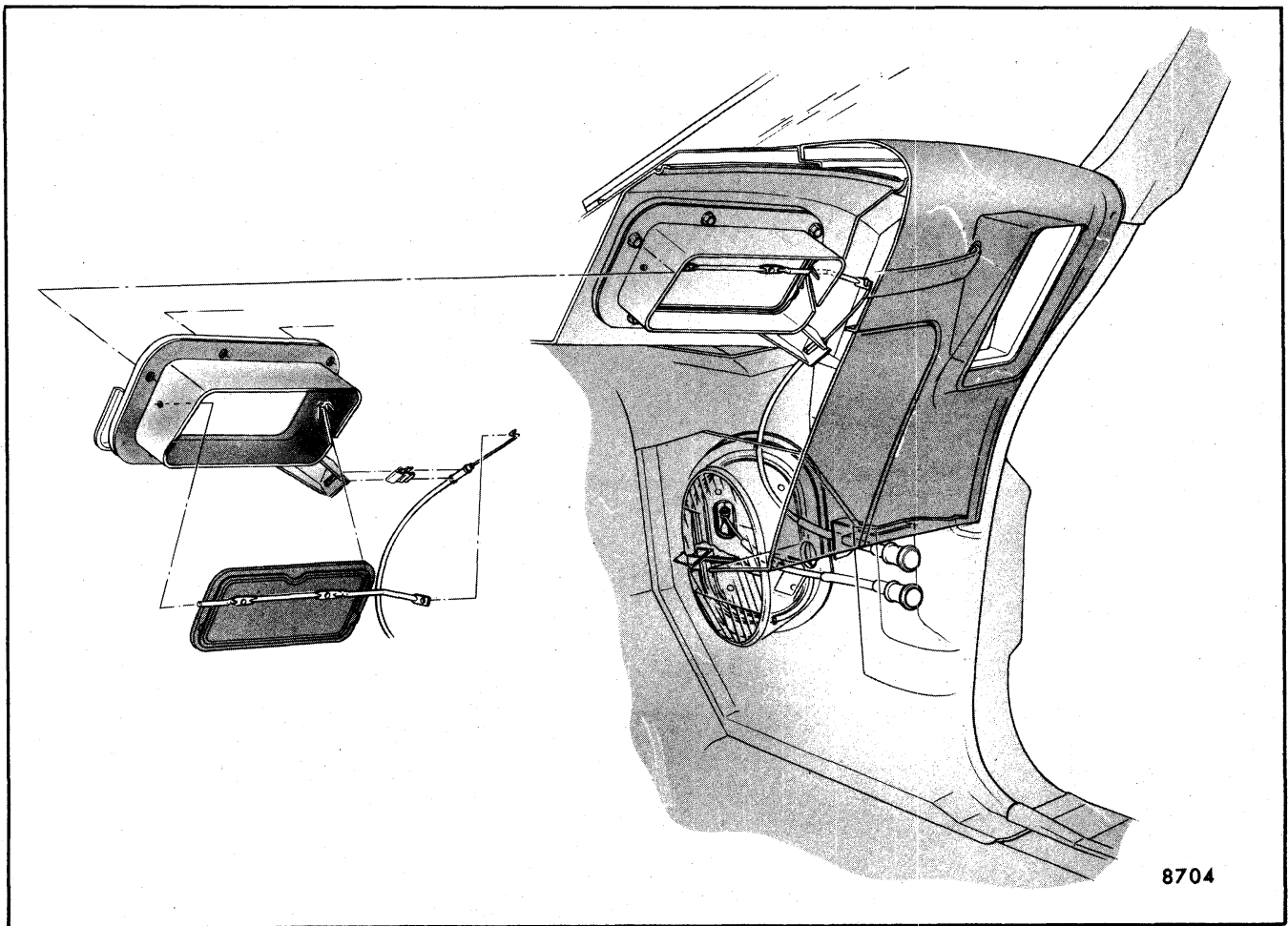


Fig. 4-5-Shroud Center Duct High-Level Air Outlet and Door - "F" Styles

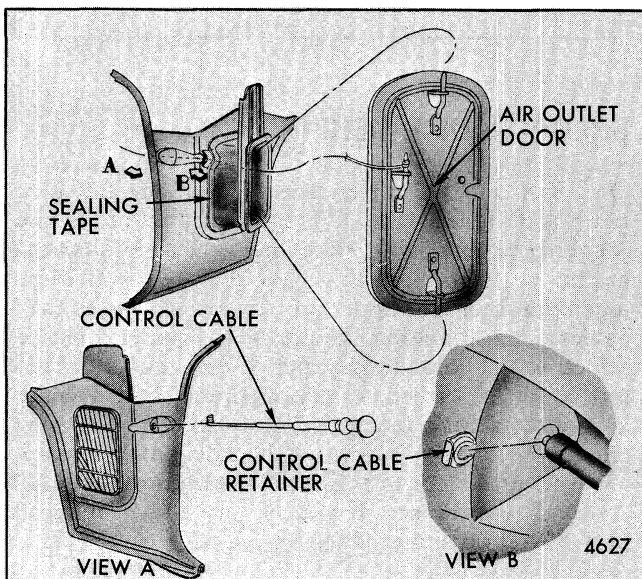


Fig. 4-6-Shroud Side Duct Air Outlet and Door

finishing panel. (Figures 4- 8, 4-9, 4-10 and 4-7 depict types of finishing panels and their installation).

On "A-B-C-E" styles the shroud side finishing panel is designed with an integral hinge pillar pinchweld finishing lace. A lower vent control cable is added to each finishing panel and a hood latch release cable to the left panel before installation. The left finishing panel is secured by two screws, the right by one screw, at the shroud side panel, and one screw in each panel at the hinge pillar (Fig. 4-8).

Removal and Installation

1. Remove sill plate.
2. Remove shroud side finishing panel attaching screws (Fig. 4- 7).
3. Move finishing panel inboard to disengage air duct outlet from body opening, then rearward to disengage panel from hinge pillar. The upper

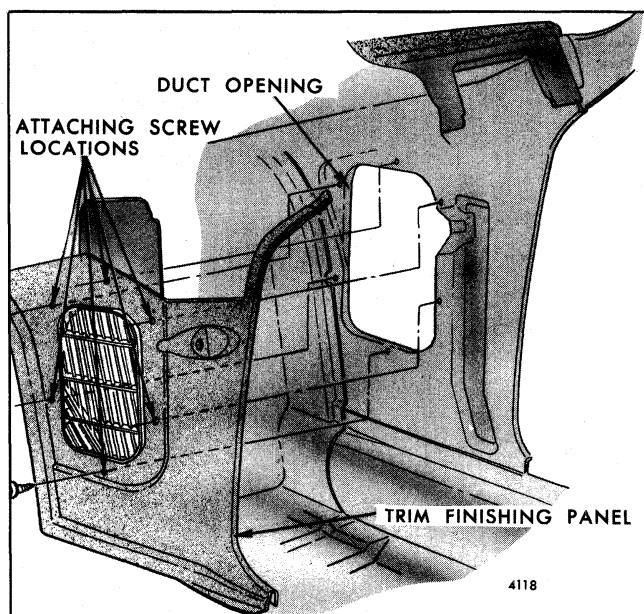


Fig. 4-7-Shroud Side Trim Finishing Panel

end of the finishing lace portion of panel can then be slipped from under windshield side garnish molding.

4. To install, reverse the removal procedure.

NOTE: On "F, H and X" styles, if the sealing tape on the attaching flanges of the finishing panel has been damaged, seal attaching flanges with medium-bodied sealer prior to installation of finishing panel.

Removal of vent control cable or door requires removal of shroud side finishing panel.

To remove control cable after finishing panel removal, slide eye of the control cable off pin on door assembly, remove control cable retainer (Fig. 4-6)

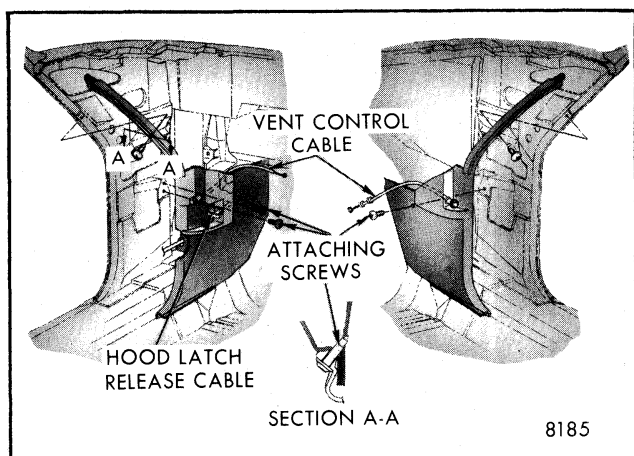


Fig. 4-8-Shroud Side Finishing Panel - "B-C-E" Styles ("A" Styles Similar)

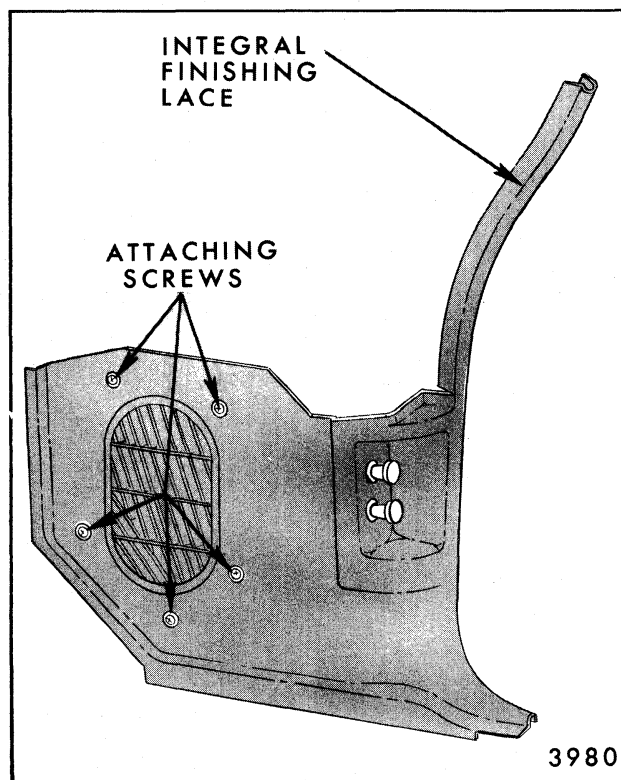


Fig. 4-9-Shroud Side Finishing Panel - "F" Styles

located flush against back surface of finishing panel and remove control cable from finishing panel. To install, reverse the removal procedure.

To remove air outlet door after finishing panel removal, slide eye of control cable off the pin on the door assembly, push downward on door to disengage upper pivot and lift door out of lower pivot. To install, reverse the removal procedure.

PRESSURE RELIEF VALVE - All Except "X-17", Standard "X-27" and "H-07 and 15" Styles

On all "A-B-C-E-F-X and H" (less "H-07,15, X-17 and Standard X-27") styles, pressure relief valves are attached to rear lock pillars (in door opening below belt) with screws. Figures 4-14 and 4-15 show pressure relief valve installations.

PRESSURE RELIEF LOUVER - "X-17, Standard X-27, X-69" and "H-07 and 15" Styles

On "X-17, Standard X-27" and "H-07" styles, air is exhausted through louvers in the body lock pillars (above belt). On the "X-69" style, the right and left roof "sail" panel louvers are "dummy" louvers. The "X-69" style utilizes conventional pressure relief

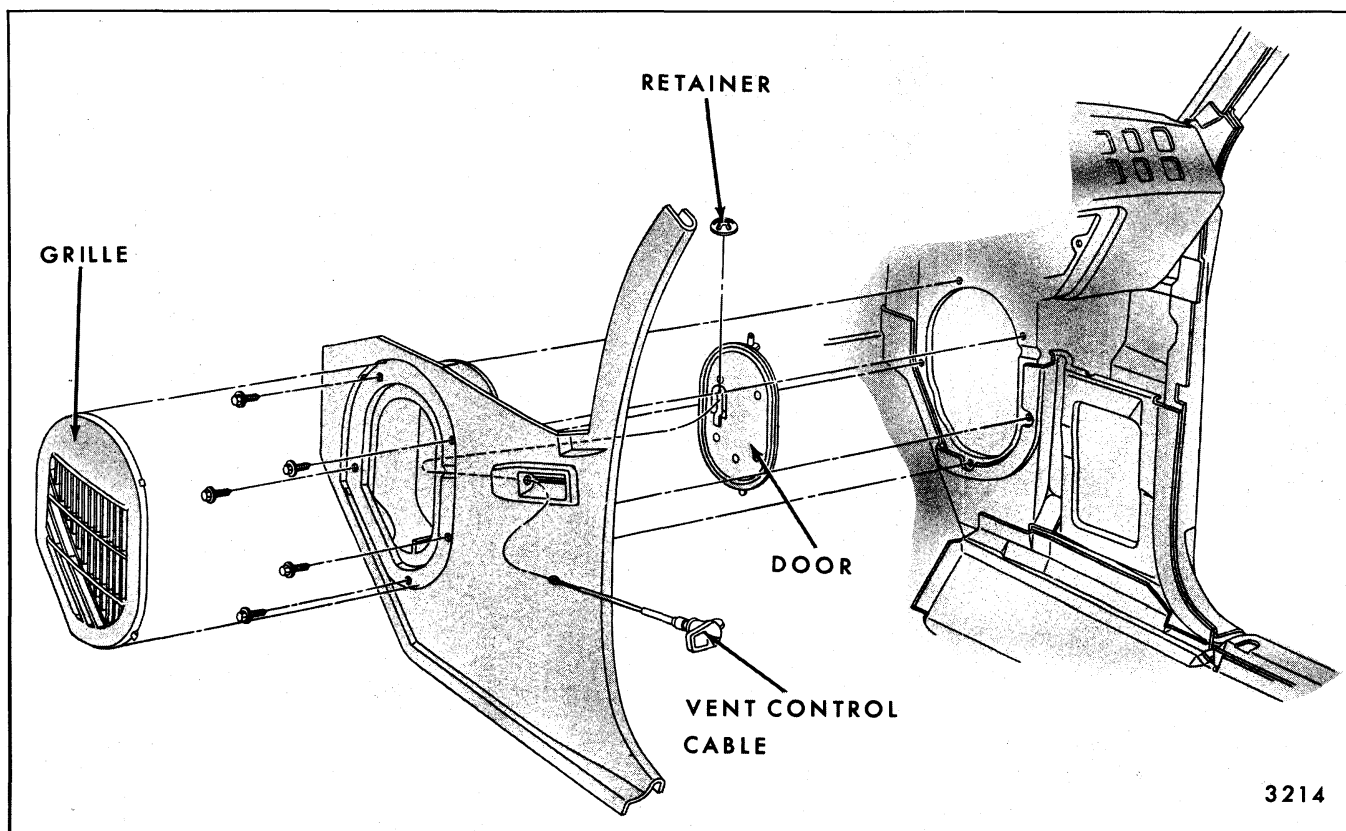
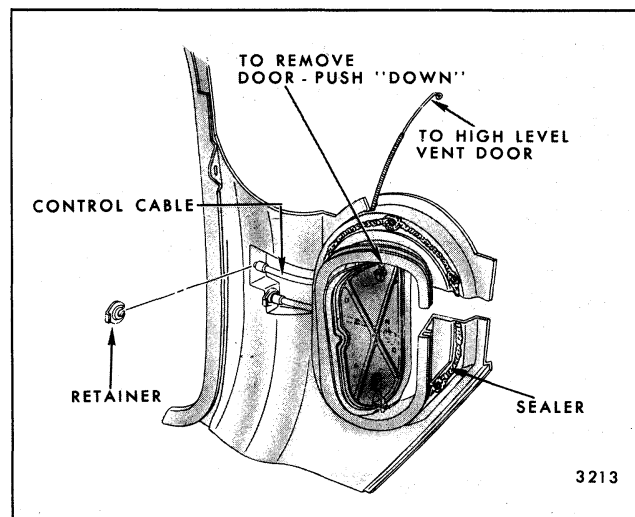
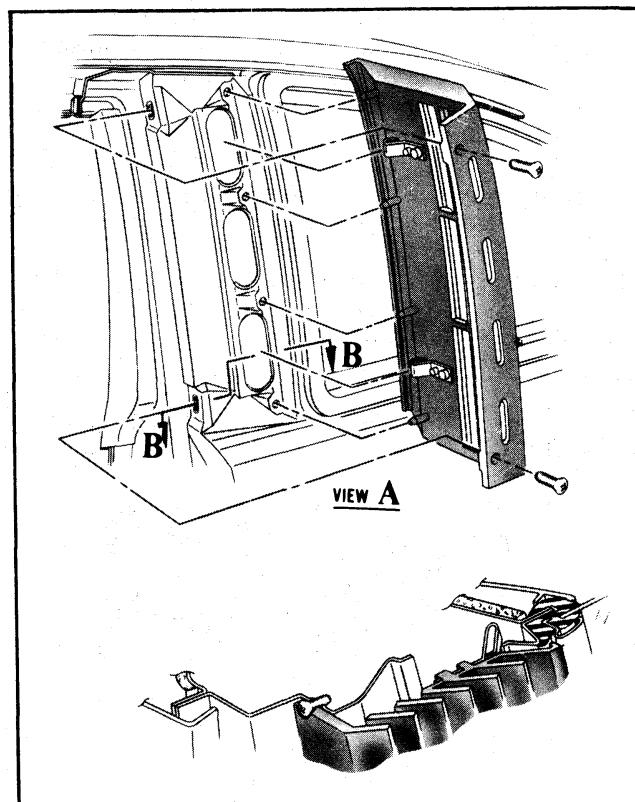


Fig. 4-10-Shroud Side Finishing Panel - "X" Styles

valves in the rear body lock pillars (in door opening below belt). Figures 4-12 and 4-13 show typical louver installations.

On the "H-15" style, air is exhausted through louvers in the rear quarter panel.

Fig. 4-11-Shroud Side Finishing Panel Sealing - "F-X" Styles
Shown - "H" Styles SimilarFig. 4-12-Louver Assembly - "X-17, and Standard X-27"
Styles

Removal and Installation - "X-17 and Standard X-27" Styles

1. Remove two louver to lock pillar attaching screws located in the door opening (Fig. 4-12).
2. Slide louver forward to disengage two "hook" type attaching clips and complete removal.
3. To install, reverse removal procedure.

Removal and Installation - "X-69" Styles

1. Remove rear quarter upper (sail) trim panel as described in "Quarter Trim", Section 6 of this manual.
2. Remove four louver to body lock pillar upper attaching nuts from sail area.
3. To install, reverse removal procedure.

Removal and Installation - "H-07" Styles

1. Remove two louver to body lock pillar (above belt) attaching screws (Fig. 4-13).

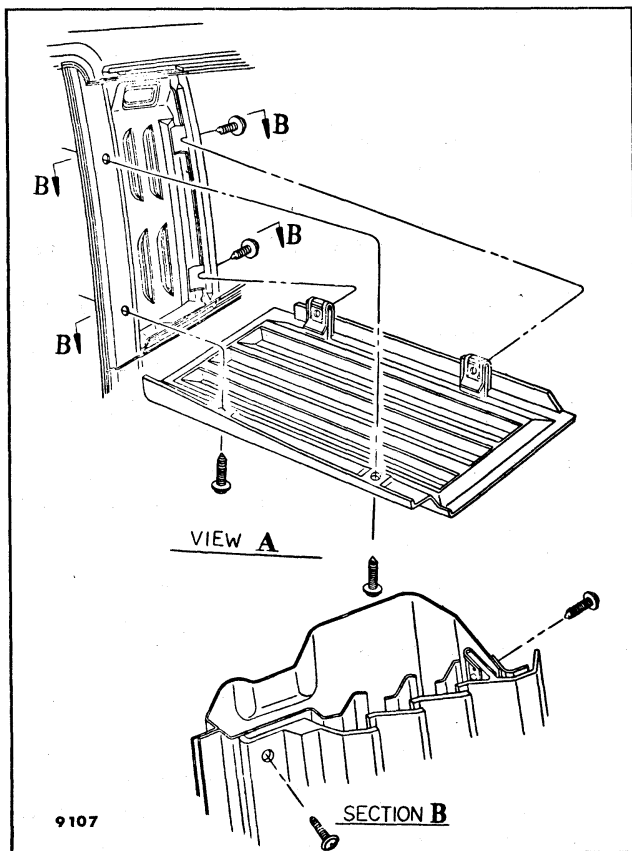


Fig. 4-13 - Louver Assembly - "H-07" styles

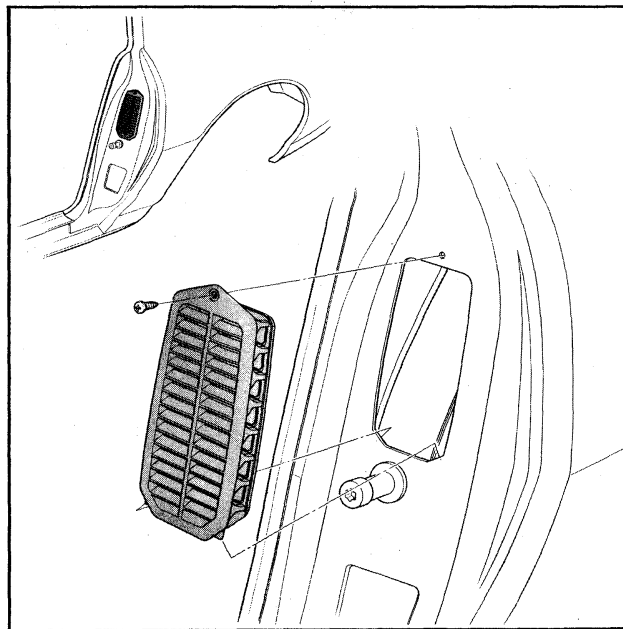


Fig. 4-14-Pressure Relief Valve - "F" Styles ("H-11,27, 77" Styles Similar)

2. Remove side roof rail front garnish molding.
3. Loosen front of side roof rail rear garnish molding to permit loosening of upper portion of body lock pillar quarter trim.
4. Using putty knife or other suitable flat-bladed tool, loosen body lock pillar portion of quarter trim at rear flange of body lock pillar to gain access to louver attaching screws.
5. Remove two louver to body lock pillar attaching screws from body upper lock pillar, and remove louver (Fig. 4-13).
6. To install, reverse removal procedure.

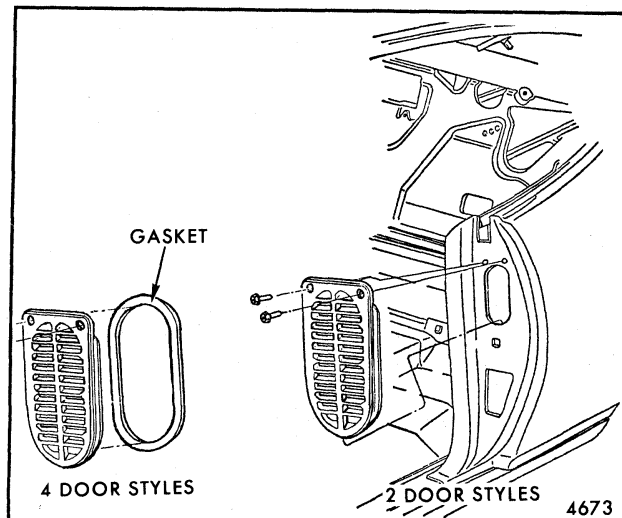


Fig. 4-15-Pressure Relief Valve - "A-B-C-E, X-27" (formal roof) and "X-69" Styles

HOOD LATCH RELEASE CABLE - "A-B-C-E" STYLES

DESCRIPTION

The rear section of hood latch release cable includes pull handle, control cable and housing. The control cable is installed through the left shroud side finishing panel (Fig. 4-16). A sealing grommet at dash panel completes the assembly.

Removal and Installation

1. Raise hood and disengage rear cable from connector.
2. Remove sealing grommet from dash panel and remove grommet from cable.
3. Remove left shroud side finishing panel, including cable assembly, sliding control cable through hole in dash panel.
4. Disengage control assembly housing from snap-in slot of finishing panel (Fig. 4-16) and remove

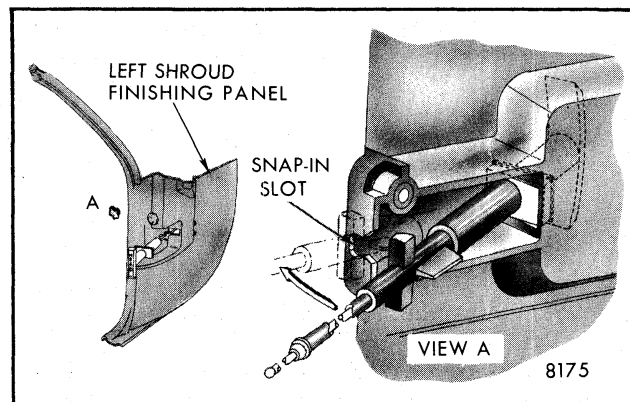


Fig. 4-16-Hood Latch Release Cable

cable assembly from panel pulling toward pull handle end.

5. To install, reverse the removal procedure. When installing grommet, hold cable taut and force grommet into hole in dash panel.

FRONT END SHEET METAL - ALL "H" STYLES

DESCRIPTION

This section includes items of front end sheet metal that are attached by bolts, screws or clips and related accessory components.

HOOD ASSEMBLY

Description

The "H" (less "07,27") style hood assembly is hinged at the front edge. The hood hinge halves are welded to the body and the hood. The pivot pin is part of the hood side hinge half (Fig. 4-17). An E-ring and retaining clip are used to attach the hood to the body.

The "H-07,27" style hood is hinged at the rear. The hood hinge is welded to the hood side and bolted to the body side (Fig. 4-18).

Removal and Installation - "H" Less "07,27" Styles

1. Raise hood and secure in open position with prop of suitable length.
2. Carefully remove retaining clip Item "B", and E-ring Item "A" as shown in Fig. 4-17.
3. With aid of a helper, disengage each hinge from its respective hinge support and remove hood assembly.
4. To install, reverse the removal procedure.

Removal and Installation - "H-07,27" Style

1. Raise hood and secure in open position with hood prop.
2. With aid of helper, remove two hinge to upper shroud attaching bolts (Fig. 4-18) and remove hood and hinge from body.
3. To install, reverse removal procedure.

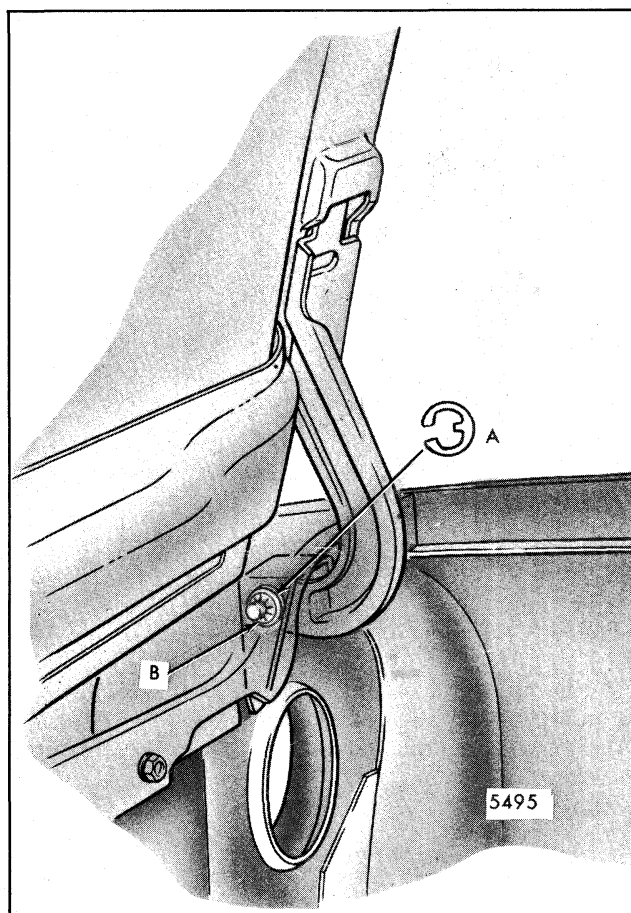


Fig. 4-17-Hood Hinge - "H-11, 15 and 77"

HOOD LATCH STRIKER

Removal and Installation

1. Raise hood and remove striker attaching screws. Remove striker (Fig. 4-19 for all "H" less "07,-27", Fig. 4-20 for "H-07, 27" style).

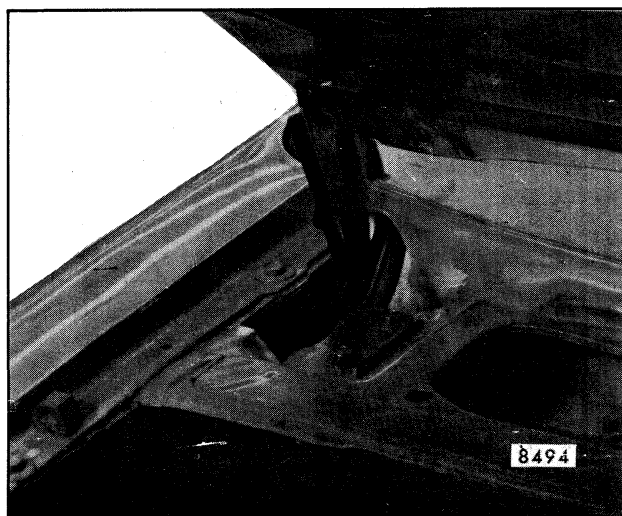


Fig. 4-18-Hood Hinge - "H-07,27"

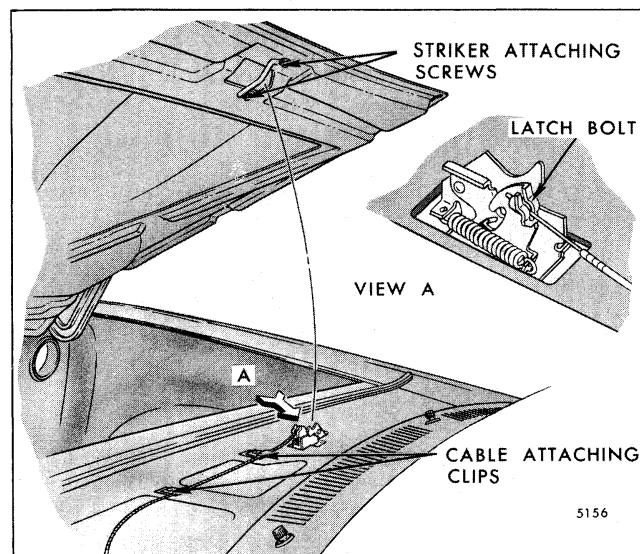


Fig. 4-19-Hood Latch and Hood Latch Striker - "H-11, 15 and 77"

2. To install, reverse removal procedure. Adjust striker laterally for proper engagement with hood latch before tightening striker attaching screws.

HOOD LATCH ASSEMBLY

Description - "H" Less "07,27" Styles

The hood latch assembly on "H" body styles (less "H-07,27") is mounted to the underside of the shroud upper panel with six spot welds (Fig. 4-21). The latch is therefore not adjustable.

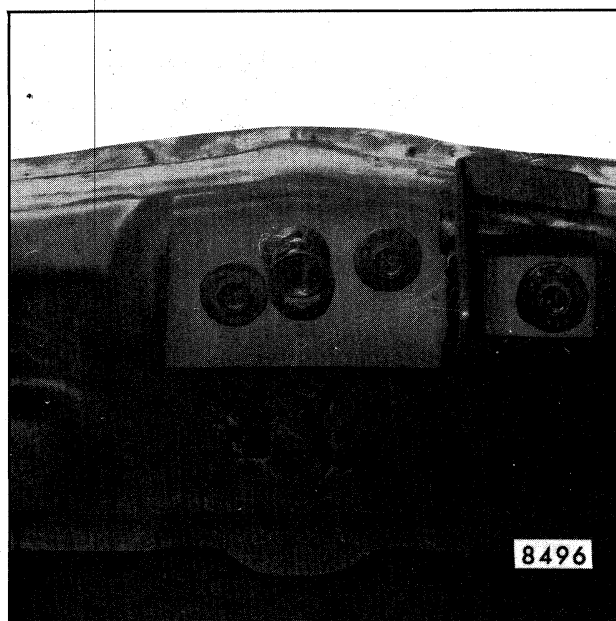


Fig. 4-20-Hood Latch Striker - "H-07,27"

Removal

1. Open hood and disconnect hood latch cable from hood latch assembly as described in subsequent procedure.
2. Scribe position of right and left side of latch onto shroud upper panel, as shown in Figure 4-21 to provide proper location for replacement latch assembly.
3. Using spotweld cutter, tool J-8943-01 or equivalent, drill out each spotweld attaching latch to shroud upper panel.

NOTE: A slight amount of weld may still retain the latch to the shroud upper panel. Working through adjacent cut-outs in panel, drive a chisel between latch and panel to complete separation of retaining weld.

4. Remove latch through adjacent cut-out in shroud upper panel.

Installation

1. Position new latch to previously scribed lines on shroud upper panel.
2. Clamp latch to shroud upper panel with clamping-type pliers.
3. Braze latch to panel through drilled out spotweld holes in shroud upper panel.
4. Connect hood latch cable onto latch assembly.

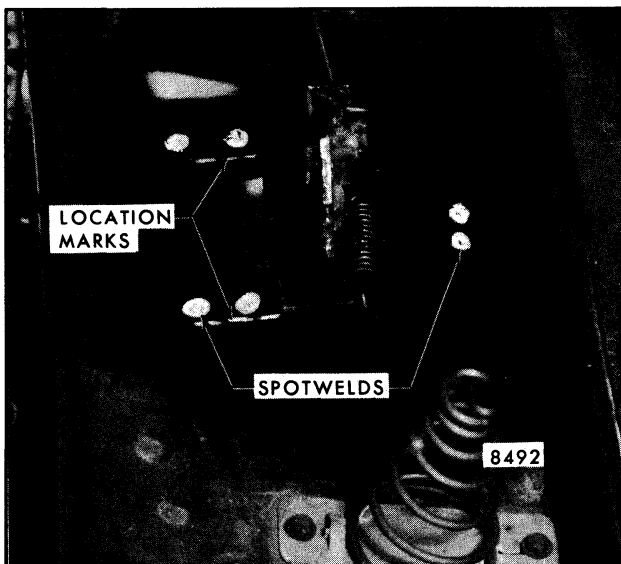


Fig. 4-21-Hood Latch Assembly - "H-11, 15 and 77"

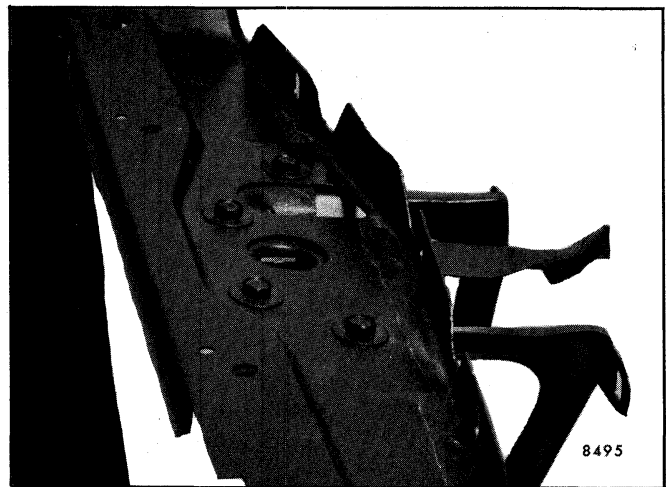


Fig. 4-22-Hood Latch Assembly - "H-07,27"

Description - "H-07,27" Style

The hood latch assembly on the "H-07,27" style is attached between the front end upper tie bar and the front end upper tie bar support by four attaching screws (Fig. 4-22).

Removal and Installation

1. Remove motor division upper bumper cover panel as described in the car division chassis manual.
2. Remove four front end tie bar to hood latch assembly attaching screws.
3. Pull latch assembly forward to remove.
4. To install, reverse removal procedure.

CONTROL ASSEMBLY - HOOD LATCH RELEASE - "H" Body (Less "07,27" Style)

Removal

1. Under instrument panel, remove screws securing hood latch release to mounting bracket. Disengage release cable grommet from opening in shroud side panel (Fig. 4-23).
2. With hood open, remove clips securing hood latch release cable to shroud upper panel (Fig. 4-19).
3. Detach cable from latch bolt. Remove hood latch release assembly toward body interior by

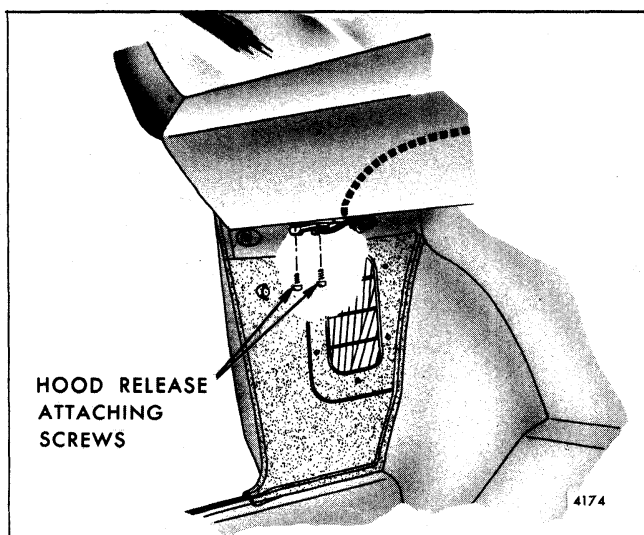


Fig. 4-23-Hood Latch Release Assembly Attachment - "H" Body (Less "07, 27 Style)

pulling cable through plenum chamber and through hole in side shroud panel (Fig. 4-23).

4. To detach cable from release assembly, remove clip securing cable to release handle (Fig. 4-24).

Installation

1. On inside of body, insert end of cable assembly through hole in side shroud panel and route cable through plenum and up over top of shroud panel (Figs. 4-19 and 4-23).
2. Insert cable end into hood latch bolt. Slide cable housing outboard to eliminate free travel in cable and secure cable to shroud upper panel with clips.

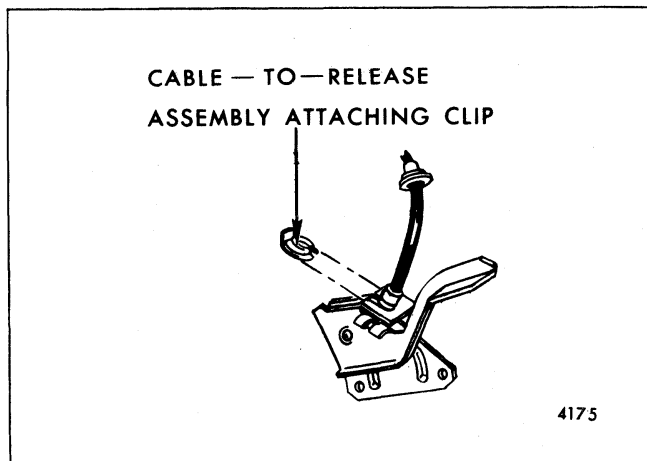


Fig. 4-24-Hood Latch Cable-to-Release Handle Attachment - "H" Body (Less "07,27" Styles)

3. On inside of body, secure hood latch release assembly to mounting bracket.
4. Position cable grommet in hole in shroud side panel.

HOOD LATCH AUXILIARY RELEASE TOOL - "H" Body (Less "07,27" Style)

If the hood latch will not operate due to collision damage, etc., tool No. J-23581 or equivalent (Fig. 4-25) may be used to release latch, allowing hood to be opened. The tool is designed to be used as follows:

1. Apply masking tape just above score line on tool to prevent possible paint damage to body. Insert tool through seventh slot to the left of the right hand wiper transmission in vent grille.
2. Guide tool through hole in vent grille to center duct reinforcement until score line on shank of tool is approximately 1/2" below top surface of vent piercing. Be certain tool passes to left of hood latch bolt.
3. Rotate tool toward right side of body to actuate hood latch bolt and release latch. Hand pressure downward on hood at latch area may be required to decrease operating effort of tool.

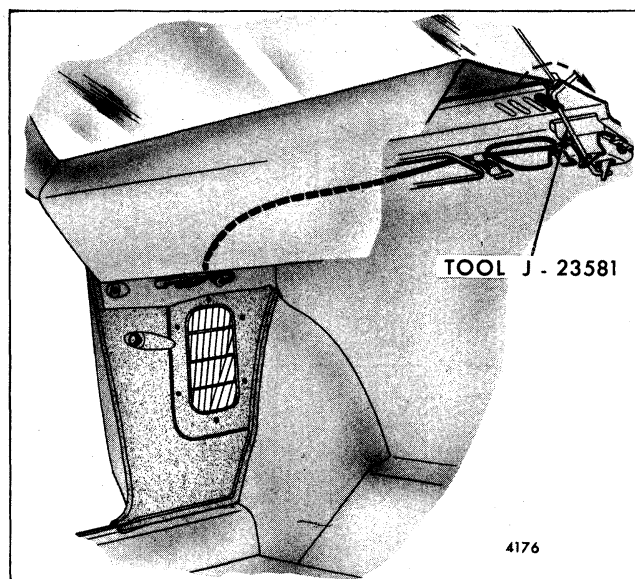


Fig. 4-25-Hood Latch Auxiliary Release Tool - "H" Body (Less "07,27" Style)

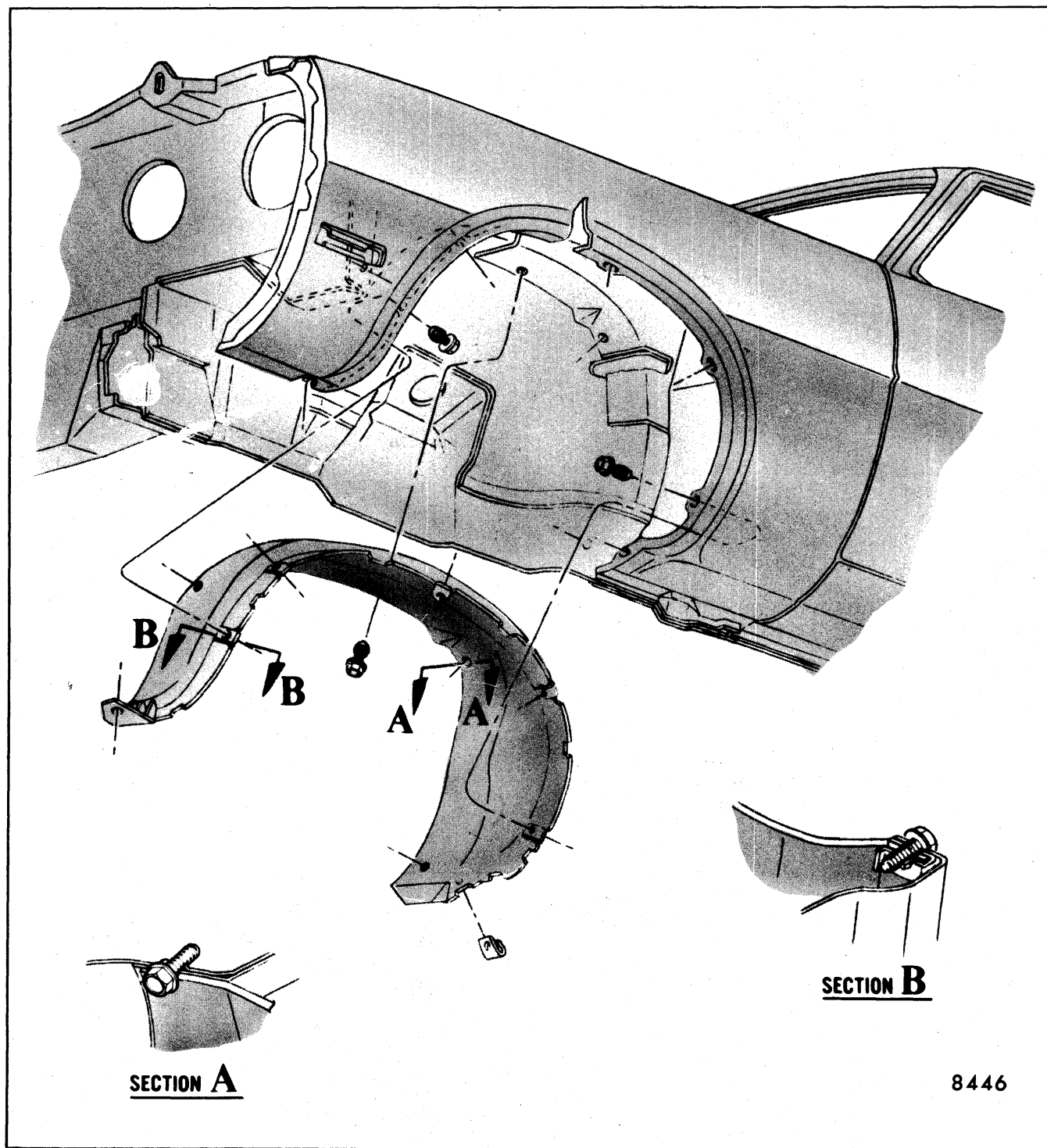


Fig. 4-26-Front Wheelhouse Outer Panel Retention

FRONT FENDER - "H" Body (Less "07,27" Style)

Removal and Installation

1. Remove headlamp door and headlamp assembly, and side marker lamp. Bumper removal is optional.
2. Remove fender-to-front end panel attaching bolts at headlamp area.
3. Remove fender to front valance panel screws.

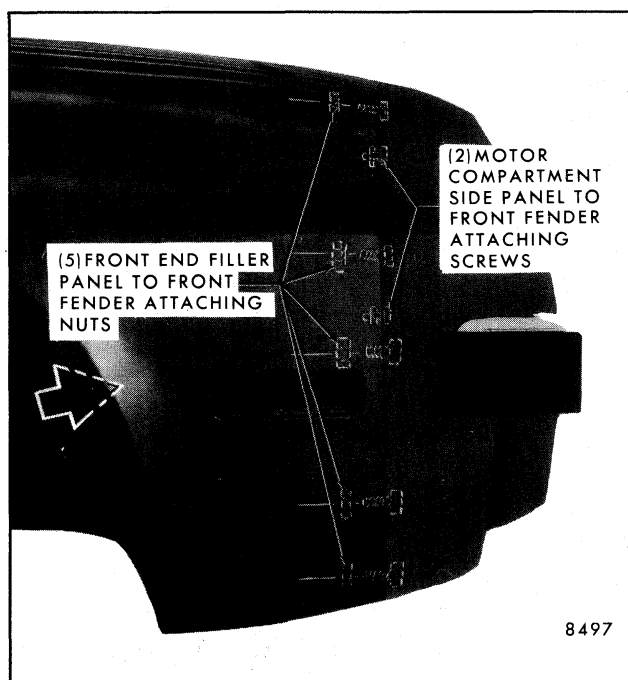


Fig. 4-27-Front of Front Fender Attachments

4. Open door and remove screws securing fender to rear facing of body hinge pillar.
5. Remove fender to lower shroud screw.
6. Remove fender to motor compartment side panel and upper shroud screws and remove fender.
7. To install, reverse removal procedure.

FRONT FENDER - "H-07" Style

Removal and Installation

1. Remove front fender wheel opening molding.

EXTERIOR MOLDINGS, NAME PLATES AND EMBLEMS

Description

The front end exterior moldings, name plates and emblems are retained to the body metal by any one or combination of the following listed attachments:

- A. Attaching screws
- B. Integral studs with retainer clips
- C. "W-base" type snap-in clips

2. Remove front wheelhouse outer panel (Fig. 4-26).
3. Working between front inner wheelhouse and front fender (at front), remove five front end filler panel to front fender attaching nuts (Fig. 4-27).
4. Pull filler panel forward and remove two motor compartment panel to front fender attaching screws.
5. Remove the remaining fender attaching bolts as follows:
 - a. Five at top of fender, under hood.
 - b. Two in front door opening.
 - c. One at underside of fender, rearward of wheel opening.
 - d. One at underside of fender, forward of wheel opening, then remove fender.
6. To install, reverse removal procedure.

BODY FRONT END PANEL - "H" Body (Less "07,27" Style)

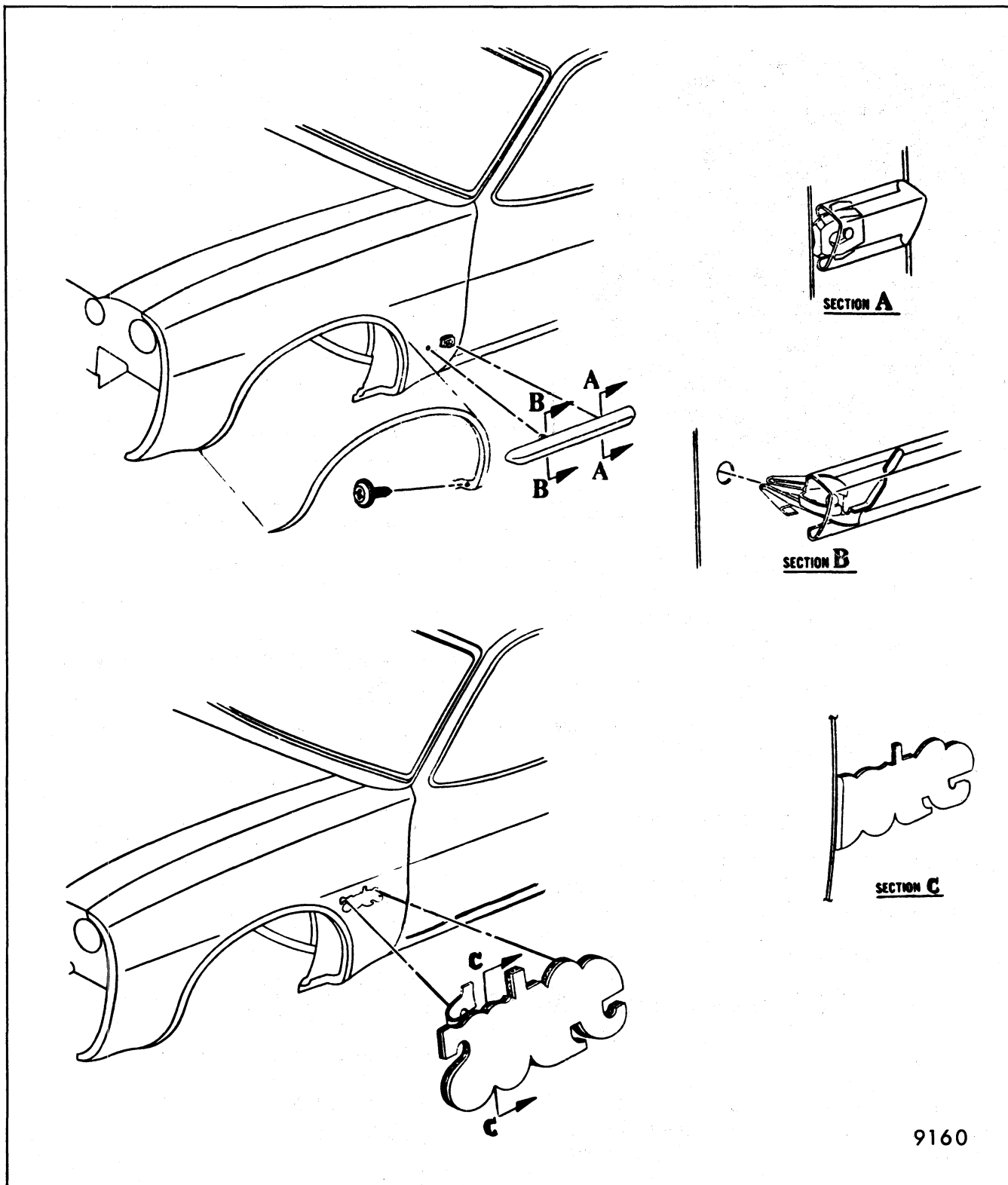
Removal and Installation

1. Remove headlamps and grille assembly.
2. Remove screws attaching front end panel to fenders and motor compartment front panel.
3. To install, reverse removal procedure.

D. Weld stud retained nylon clips

E. Adhesive backed

Figures 4-28 and 4-29 illustrate typical molding and name plate attachments. When servicing exterior moldings, name plates or emblems, all adjacent finishes should be protected with masking tape to prevent paint damage. Proper tools and care should be employed to prevent damage to part being serviced.



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Fig. 4-28-Molding and Name Plate Attachments

ADHESIVE BODY SIDE MOLDINGS

If for any reason an adhesive-backed molding is partially loose or detached from the body, it should be

replaced as follows:

NOTE: To insure positive adhesion, panel surface must be warm (70 degrees plus), clean and wax free

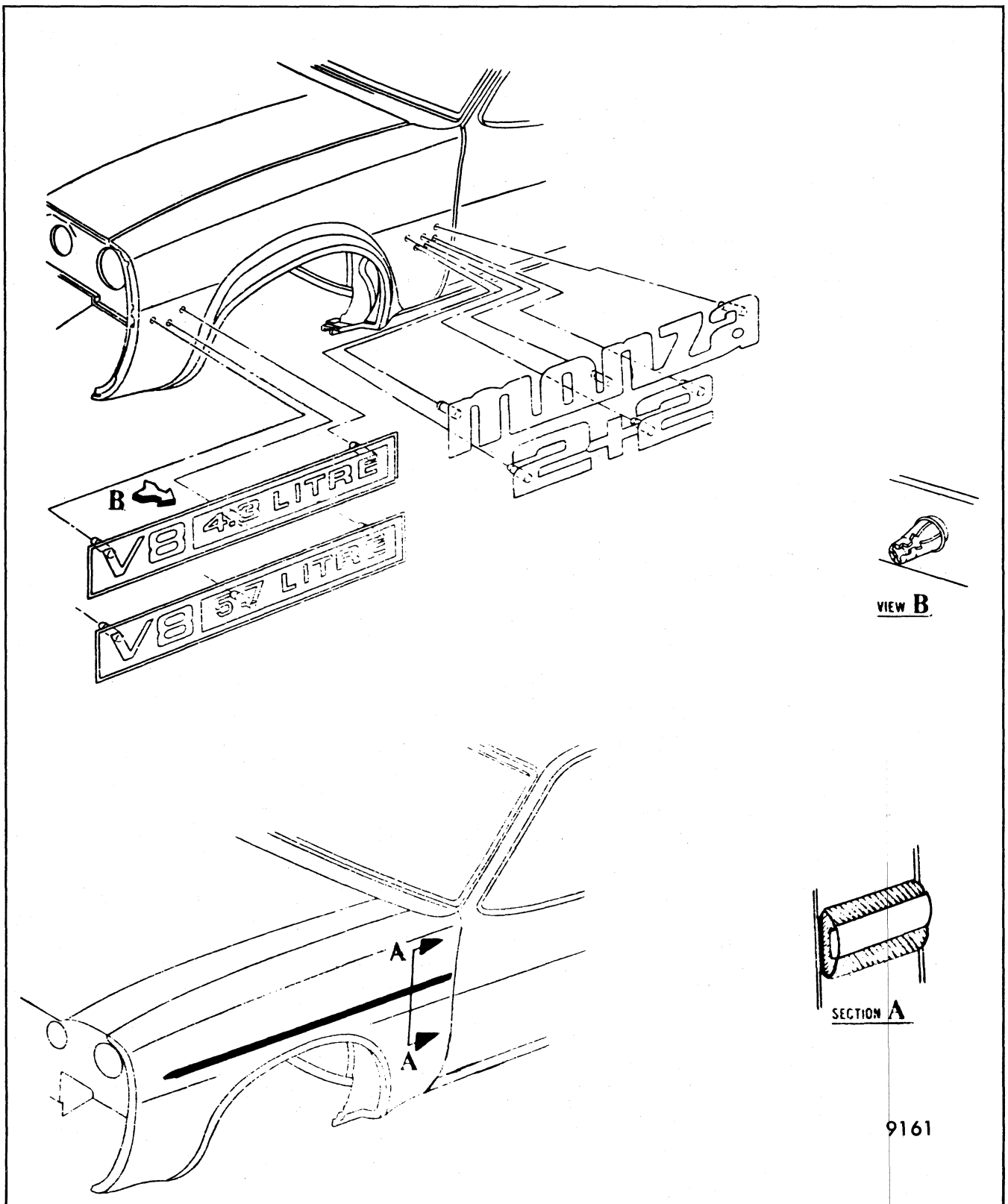


Fig. 4-29-Molding and Name Plate Attachments

prior to installation of molding. The basic molding installation procedure which follows is applicable for emblems and name plates.

1. Clean affected panel by washing with soap and water and wipe dry.

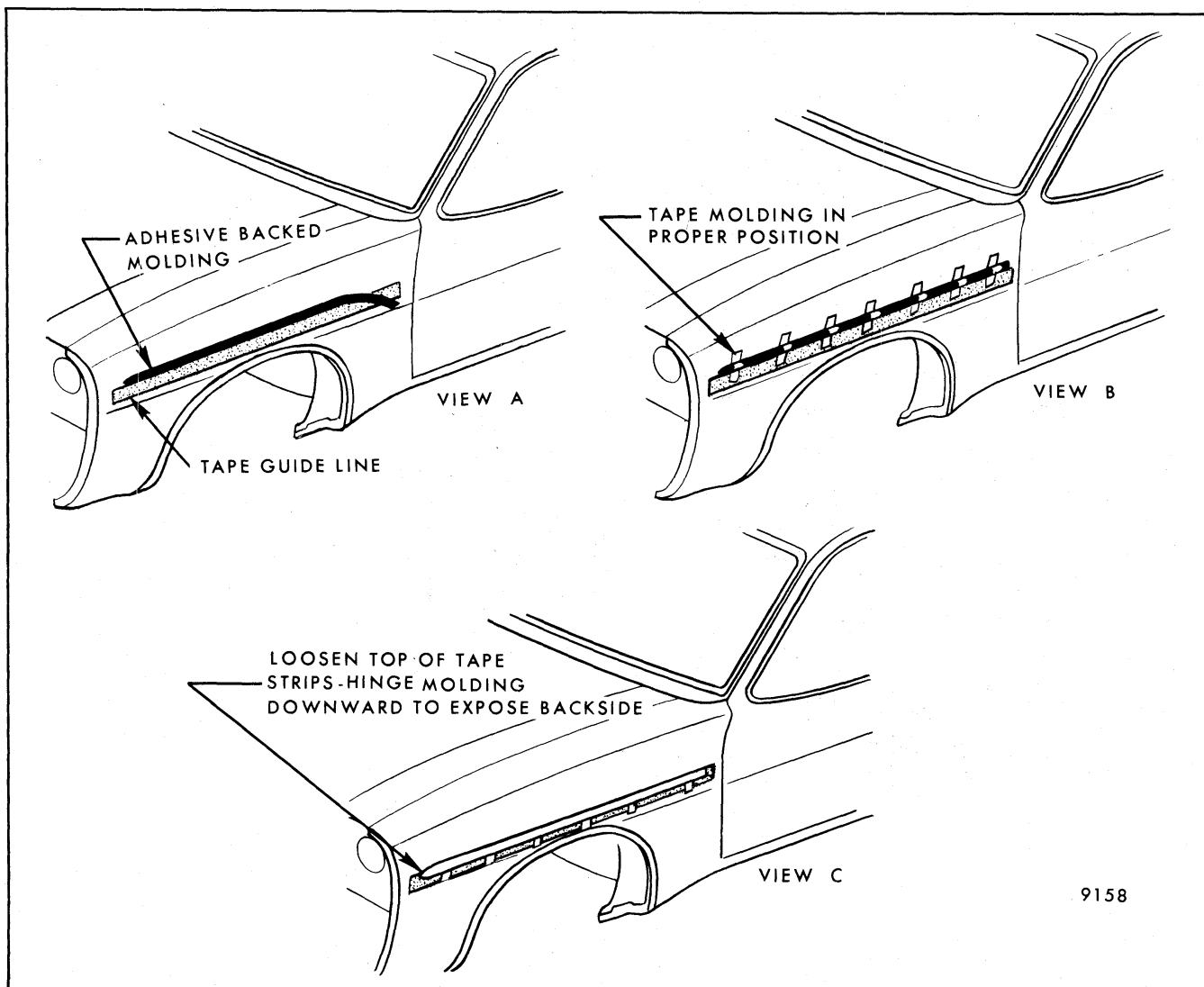


Fig. 4-30-Adhesive-backed Molding Installation

2. Mark proper alignment position with a length of cloth body tape (Fig. 4-30). Use adjacent moldings as a guide if applicable.
3. Wipe molding attaching surface of panel and adhesive side of molding with naphtha.

NOTE: If separation occurs between adhesive-backed tape and molding (tape remains on body panel), do not remove tape from body. Naphtha wipe back of molding and adhesive tape, then proceed to step 4.

4. Hold molding in its proper position with strips of cloth or masking tape (Fig. 4-30) every 6 to 8 inches. If shop temperature is below 70 degrees F, warm the body panel immediately prior to adhesive application with a heat lamp or heat gun, while proceeding to step 5.
5. Loosen top of tape strips (Fig. 4-30) holding molding in position. Hinge molding downward to gain access to back of molding. Using a circular pattern, quickly apply a thin even film of 3M Super Weatherstrip Adhesive or equivalent, to the adhesive portion of the molding.
6. Immediately align molding to previously installed tape guideline and firmly press in place. Hold in place with tape strips.
7. Allow to set 15 minutes. If clean-up of adhesive squeeze-out is required, use a cloth dampened slightly with naphtha.
8. Remove tape strips and alignment tape guides.

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SECTION 5

DOORS

INDEX

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INTRODUCTION

This section of the manual contains the service operations necessary for the removal, installation, adjustment and sealing of door assemblies and individual hardware and trim components.

The first portion of this section "Door and Center Pillar Trim" includes removal and installation procedures for all door and center pillar trim items. The remaining door hardware items are divided into four categories:

1. "Exterior Moldings"

2. "Front and Rear Doors" - items common to both front and rear doors, including door and side roof rail weatherstrip
3. "Front Doors" - items pertaining only to front doors
4. "Rear Doors" - items pertaining only to rear doors

Body series and style references are explained in Section 1 - General Information. Unless otherwise stated, the procedures in the "Door" section apply to all body styles.

DOOR AND CENTER PILLAR TRIM

DOOR INSIDE PULL HANDLES

Door inside pull handles are secured to the trim pad with screws or stud nuts on the outboard (reverse) side of the trim assembly prior to trim installation. In addition, on some styles, the handles are secured to the door inner panel with screws installed from the inboard side after trim installation. With this method of installation, the pull handle and trim pad are removed from the door as an assembly (Figs. 5-1,

5-2, 5-3 and 5-4).

NOTE: To remove the door trim assembly on any style equipped with a door pull handle requires removal of the screws inserted through the handle base into the door inner panel. On styles with snap-on escutcheons covering the handle screws, carefully disengage the escutcheons from the retainers using a flat-bladed tool (Figs. 5-1 and 5-2).

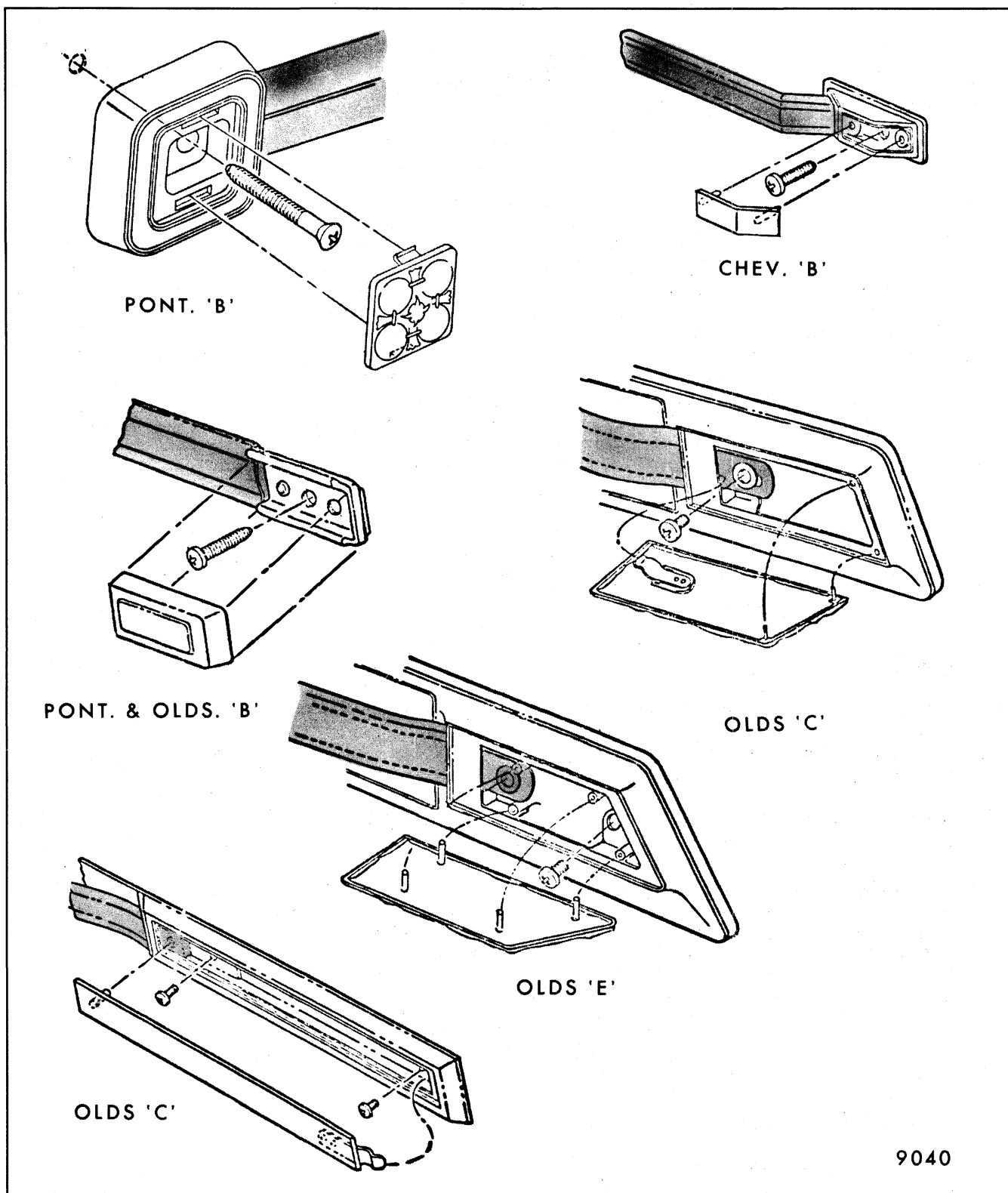
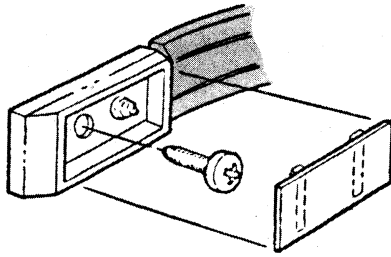
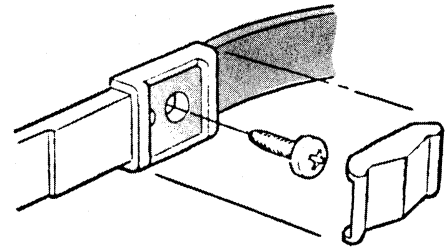


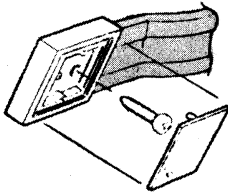
Fig. 5-1-Typical Door Pull Handle Attachment - "B, C and E" Styles



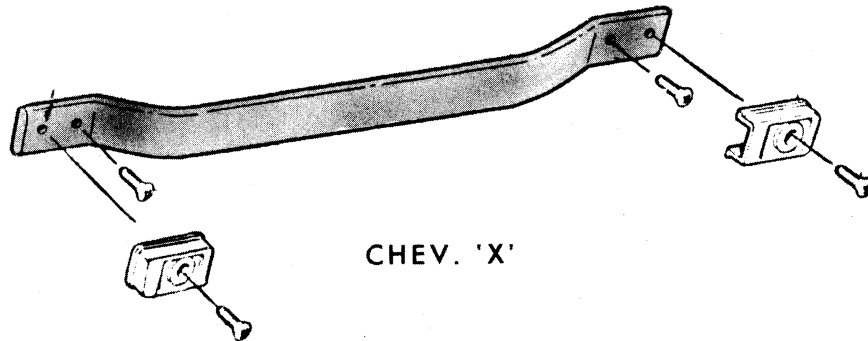
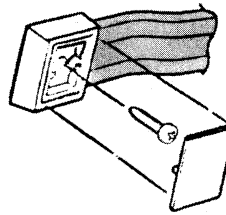
CHEV. 'A'



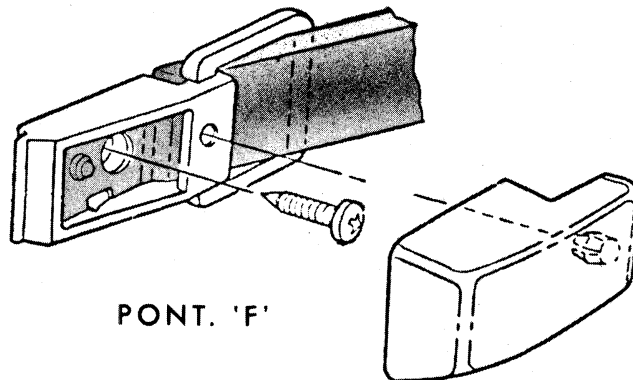
PONT. 'A'



OLDS & BUICK 'A'



CHEV. 'X'



PONT. 'F'

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Fig. 5-2-Typical Door Pull Handle Attachment - "A, F and X" Styles

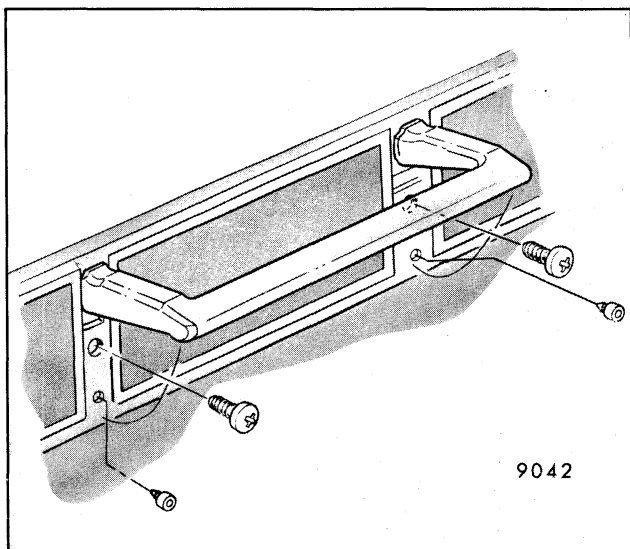


Fig. 5-3-Typical Door Pull Handle Attachment - Buick and Cadillac "C and E" Styles

DOOR ARMRESTS - "F, H and X" Styles

There are two basic types of door armrests: those applied after door trim installation and those which are an integral part of the door trim assembly. For removal of the first type armrests, refer to Figure 5-4.

DOOR OUTSIDE MIRROR REMOTE CONTROLS AND ESCUTCHEON

On most styles with remote control door outside mirrors, the remote control mirror cable must be disengaged from the door trim assembly or armrest to permit trim assembly removal. To disengage the remote cable from the door trim assembly, refer to Figures 5-5 and 5-6.

On "A" body styles, remove upper door trim assembly. Grasp retainer with long nosed pliers, and rotate 90 degrees to separate remote control cable from previously installed escutcheon (see Fig. 5-5).

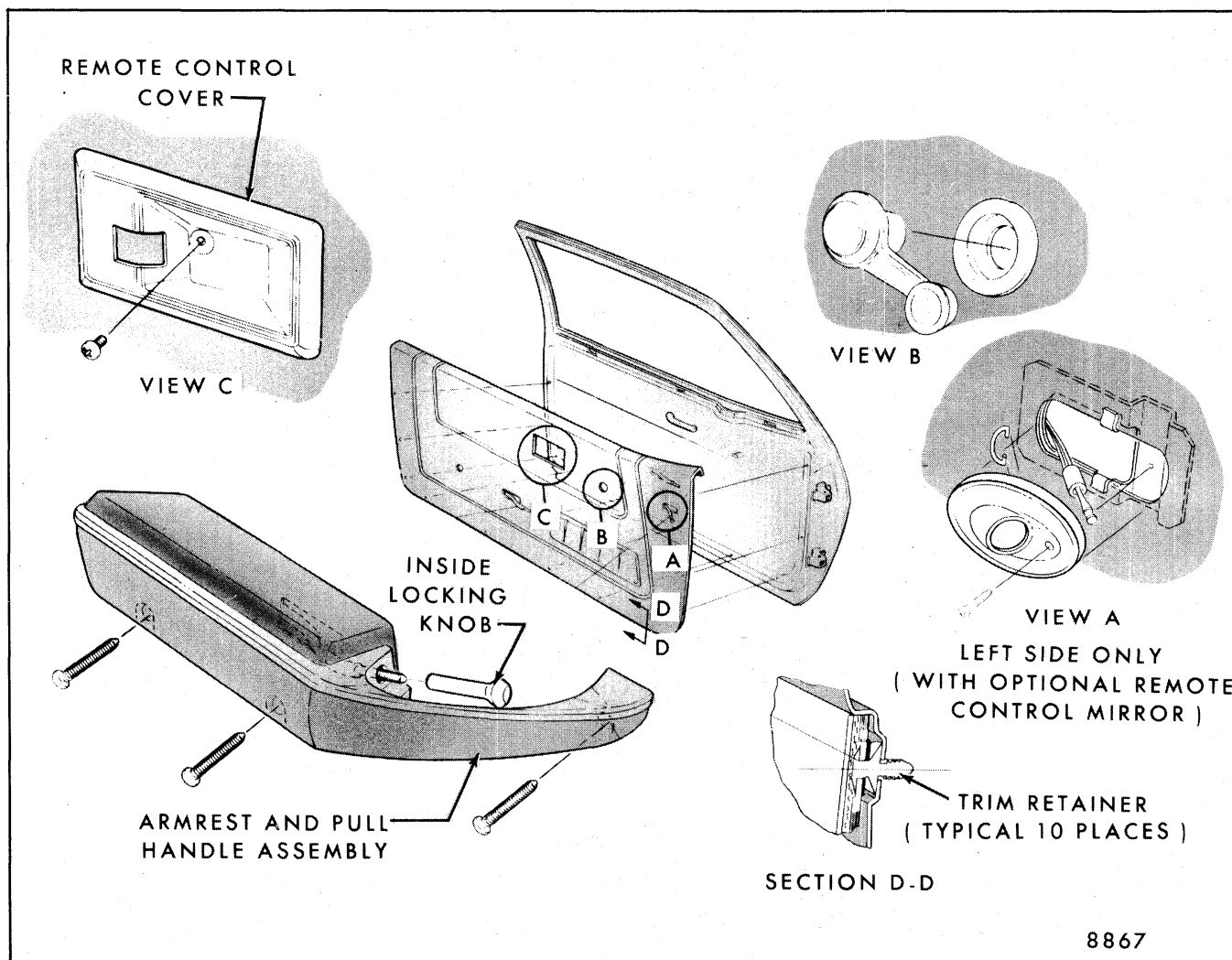
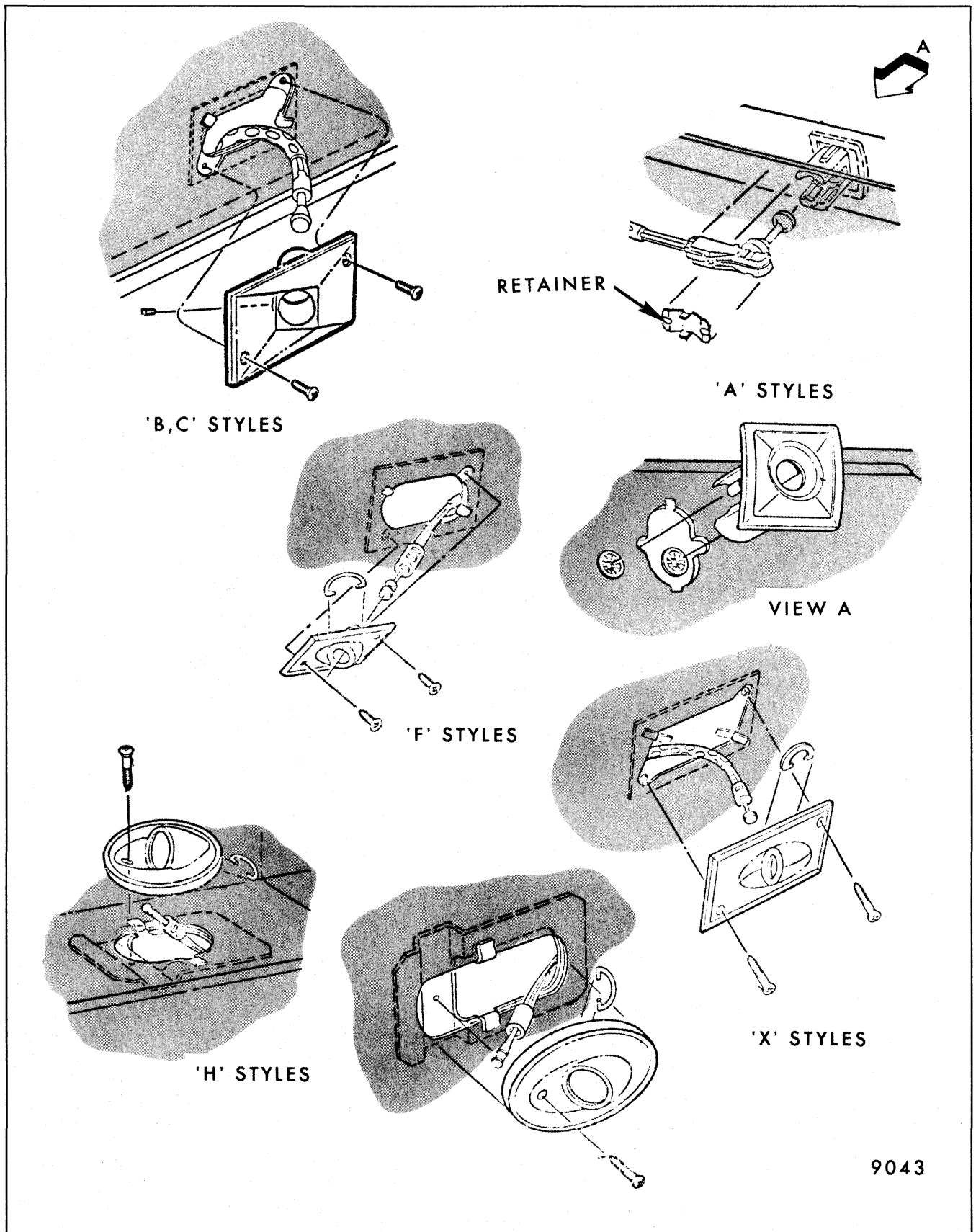


Fig. 5-4-Door Armrest and Pull Handle - Typical Attachment for "F, H and X" Styles



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Fig. 5-5-Typical Remote Mirror Cable and Escutcheon Attachment

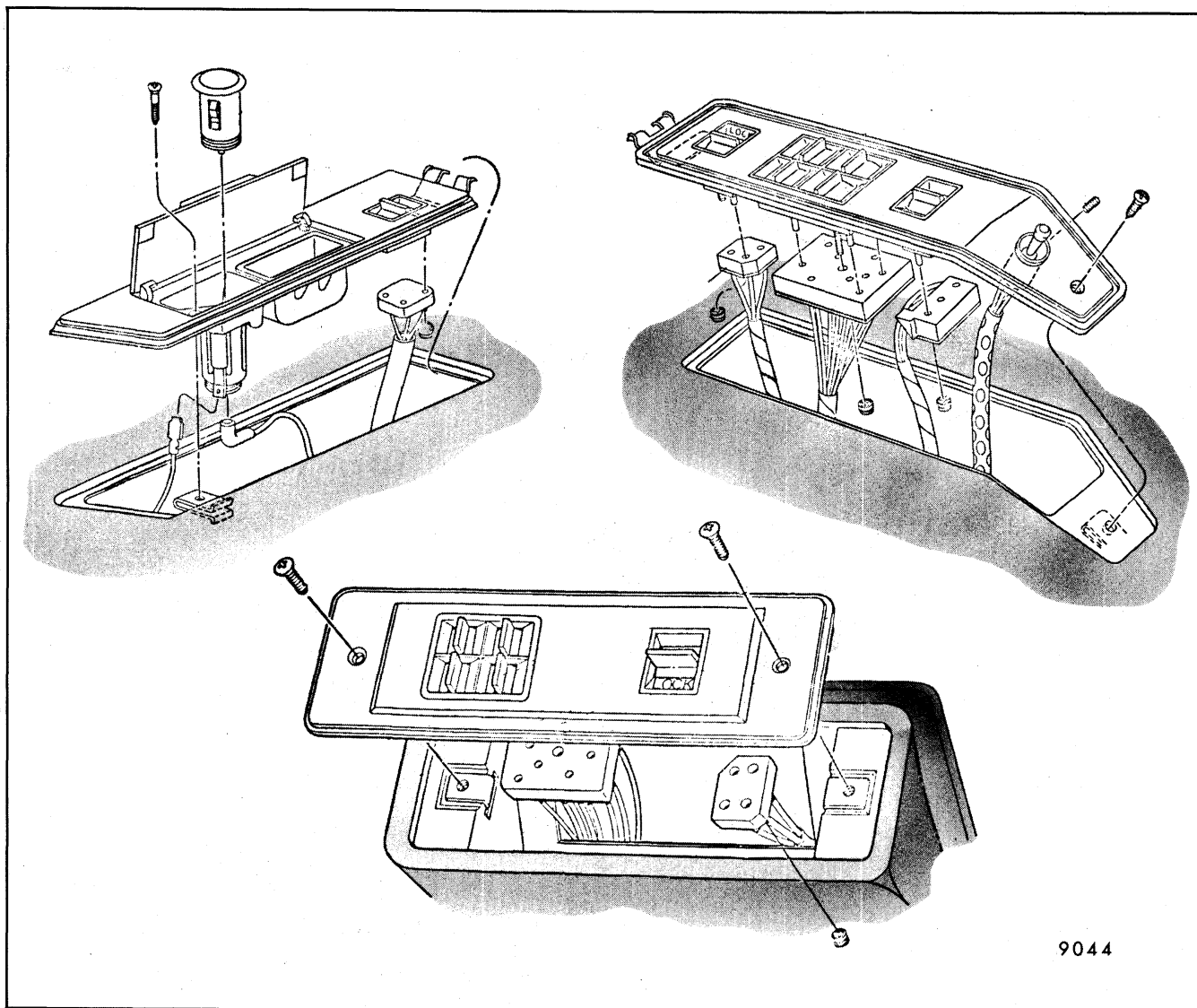


Fig. 5-6-Door Armrest Switch Cover Plate and Remote Mirror Cable Attachment - "C and E" Styles

DOOR INSIDE HANDLES

Door inside handles are retained by either screws, pop rivets or spring clips (Figs. 5-8, 5-9 and 5-10). On styles equipped with screw or rivet retained handles, the screws or rivets are either exposed or covered by a remote control handle cover plate that can be removed as shown in Figures 5-8 and 5-10.

Removal and Installation

1. Clips hidden by window regulator or remote

control handles (Fig. 5-9) can be disengaged by depressing door trim assembly sufficiently to permit inserting tool J-9886 or equivalent between handle and plastic bearing plate (Fig. 5-11). Then, with tool in same plane as inside handle, push tool as indicated to disengage clip. Pull handle inboard to remove from spindle.

2. To install window regulator handles, engage retaining clip on handle. Position handle at same angle as opposite side handle and press handle outboard until clip engages regulator spindle. On remote control spindles, install handle in a horizontal position.

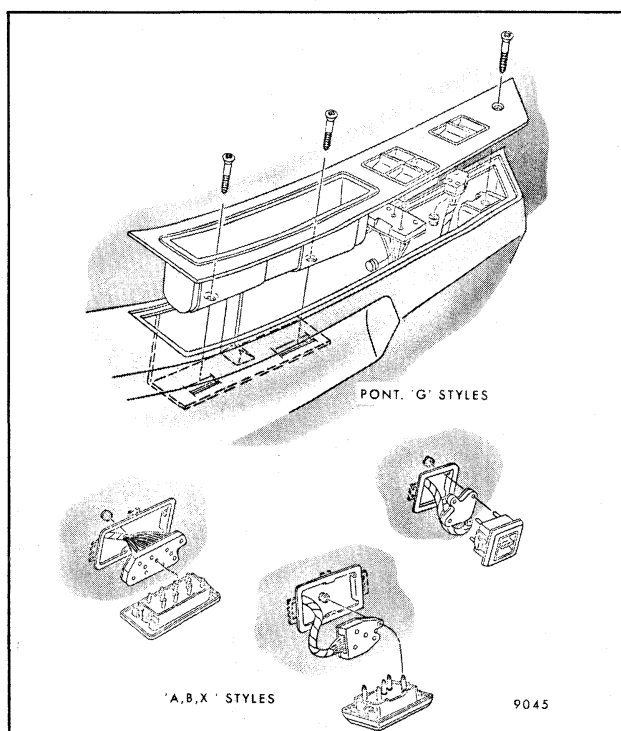


Fig. 5-7-Armrest Switch Plate and Power Switch Attachment
- "A B, G and X" Styles

DOOR TRIM ASSEMBLIES

There are two basic types of door trim assemblies, a one-piece trim assembly that is used on "H and X" styles and a two-piece trim that is used on all other styles.

On "H-07, 27" and "X" styles, the one-piece trim hangs over the door inner panel across the top and is secured by clips down the sides, and across the bottom. (Fig. 5-4 is a composite illustration of the various types of door trim panel fasteners.)

On "H-11,15 and 77" styles, the trim assembly is retained at the top, bottom and sides with plastic clips. Attaching screws located in the pull cup provide additional retention.

On "A, B, C, E and F" styles with the two-piece trim, the upper portion hangs over the door inner panel across the top and is secured by trim nails, or screws, across the bottom. The lower portion is retained by screws across the top and by clips down the sides and across the bottom. Figure 5-12 shows typical two-piece trim panel retention methods.

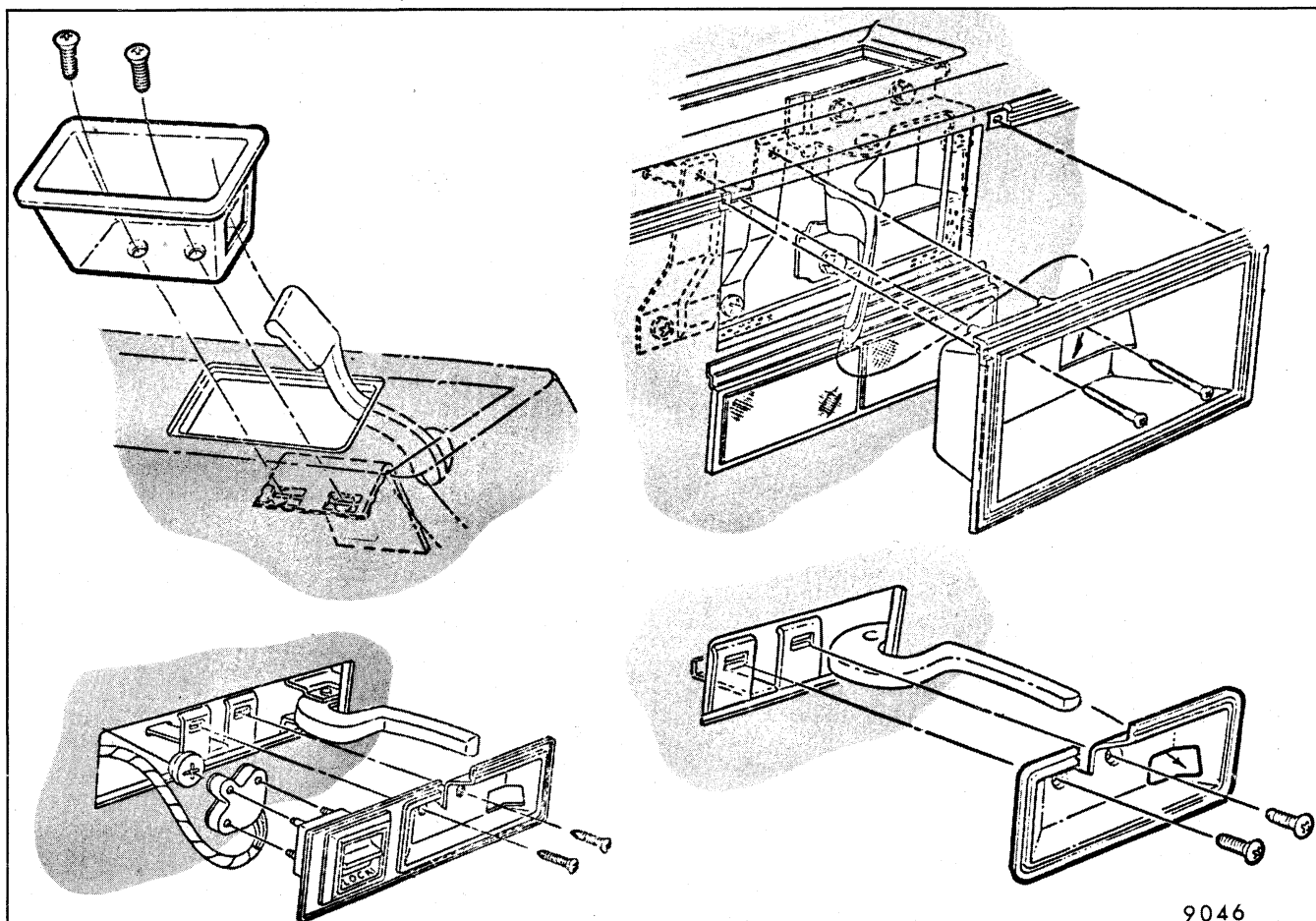


Fig. 5-8-Typical Door Lock Remote Control Handle and Cover Plate Installations - "B, C and E" Styles

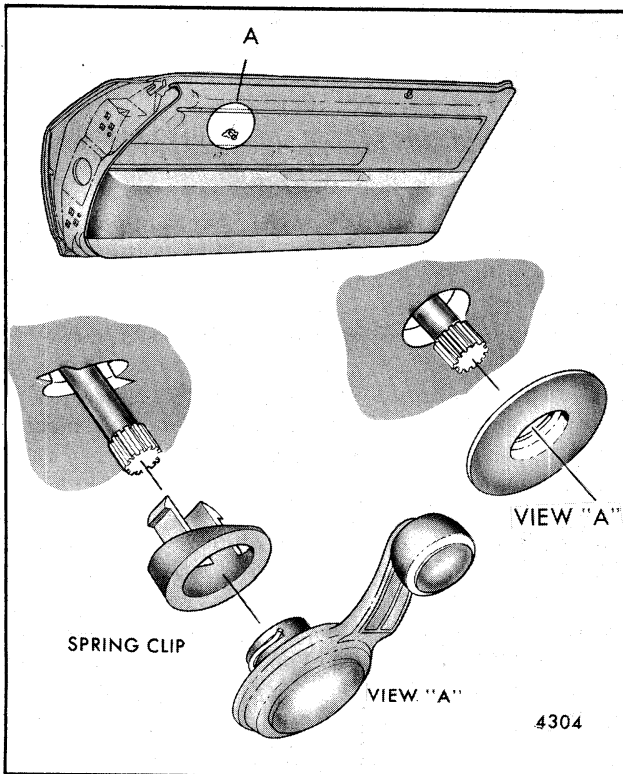


Fig. 5-9-Typical Window Regulator Handle Installation

Removal and Installation

1. Remove all door inside handles as previously described.
2. Remove door inside locking rod knob.
3. On styles equipped with door pull handles, remove screws inserted through handle into door inner panel. (For location of screws, refer to Figs. 5-1, 5-2, 5-3 and 5-4.)
4. On styles with remote control mirror assemblies, remove remote mirror escutcheon and disengage end of mirror control cable from escutcheon as previously described (Figs. 5-5 and 5-6).
5. On styles equipped with switch cover plate in door armrest, remove screws securing cover plate and disconnect switches and cigar lighter (if equipped) from wire harness connectors (Figs. 5-6 and 5-7).
6. On styles with remote control cover plates (Figs. 5-4, 5-8 and 5-10), remove exposed screws securing cover plate to door inner panel.
7. On styles with integral armrest, remove screws inserted through pull cup into armrest hanger

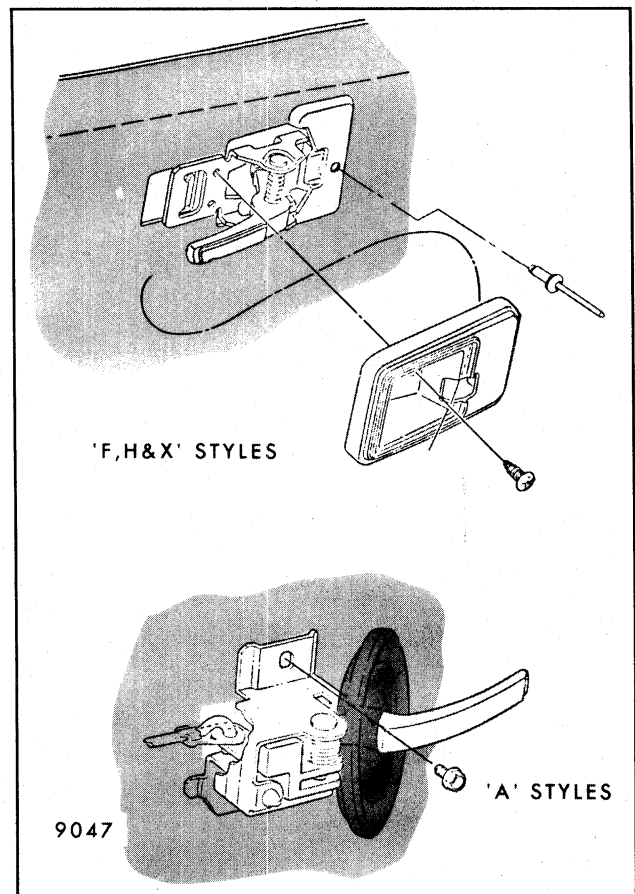


Fig. 5-10-Typical Remote Control Handle Cover Plate Installations - "F, H and X" Styles

support (Sec. D-D, Fig. 5-12). On styles with armrest applied after door trim installation (Fig. 5-4), remove armrest to door inner panel attaching screws.

8. On styles, with two-piece trim assemblies, remove attaching screws located at each side of upper trim assembly (Sec. C-C, Fig. 5-12). Then, using tool BT-7323 or equivalent, disengage retaining nails from plastic cups inserted in door inner panel along lower edge of upper trim if

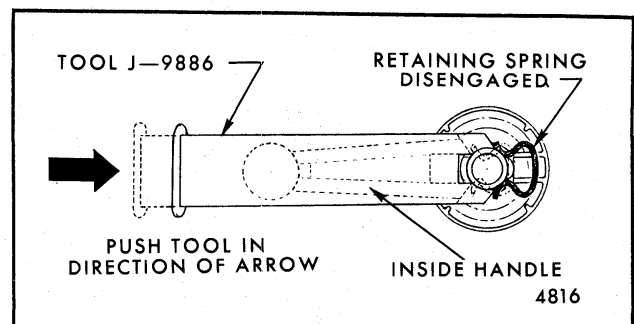
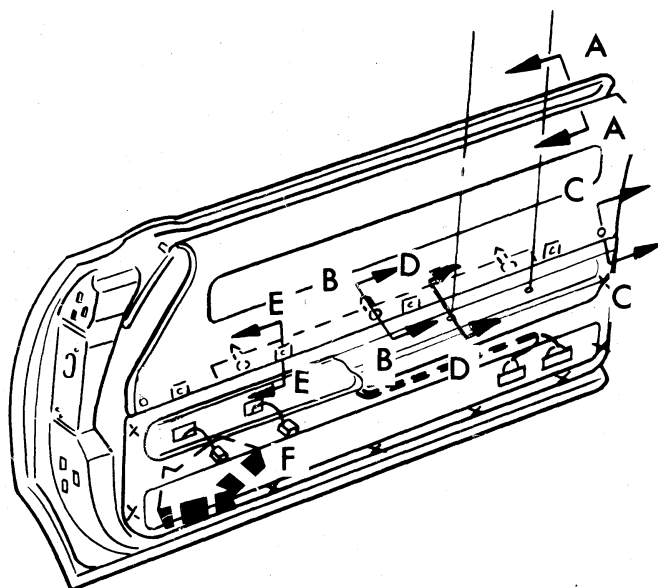


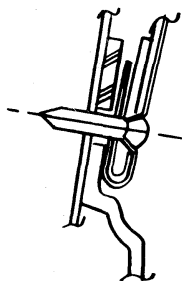
Fig. 5-11-Clip Retained Door Inside Handle Removal



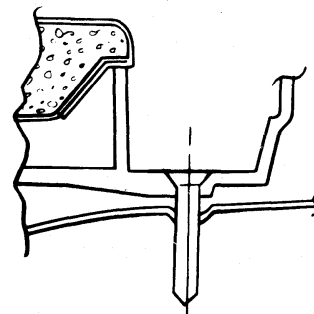
SECTION A-A
TYPICAL 2 PLACES



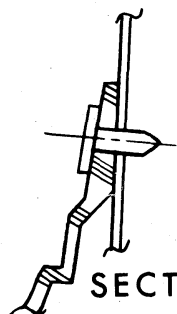
SECTION B-B
3 PLACES



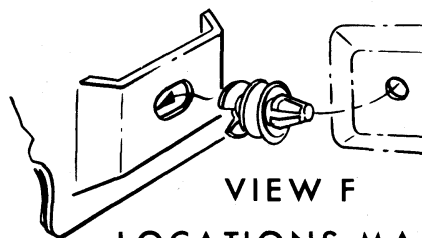
SECTION C-C
2 PLACES



SECTION D-D
2 PLACES



SECTION E-E
4 PLACES



VIEW F
LOCATIONS MARKED 'X'

9048

Fig. 5-12-Typical Types of Two-piece Door Trim Retention

present (Sec. B-B, Fig. 5-12). Remove upper trim from door by lifting upward and sliding it slightly rearward to disengage it from door inner panel at beltline (Sec. A-A, Fig. 5-12).

NOTE: On styles with electric switches located in door trim assembly, disconnect wire harness at switch assembly (Fig. 5-7).

To remove lower trim, remove attaching screws along upper edge of lower trim assembly (Sec. E-E, Fig. 5-12). Then, starting at a lower corner, insert tool BT-7323 or equivalent, between door inner panel and trim assembly and disengage retaining clips down both sides and across bottom (View F, Fig. 5-12).

NOTE: On styles with courtesy lamps located in lower trim assembly, disconnect wire harness at lamp assembly (Fig. 5-13).

9. On "H and X" styles with one-piece trim assemblies remove all clips around perimeter of door trim pad using tool BT-7323 or equivalent (Fig. 5-4).

To remove trim assembly, lift trim assembly upward and slide it slightly rearward to disengage it from door inner panel at the beltline. On styles with electric switches located in the door trim assembly, disconnect wire harness and remove trim assembly from door (Fig. 5-7).

10. On styles with insulator pad cemented to the door inner panel, remove pad by lifting edge and separating from inner panel with a putty knife or similar tool.
11. To install insulator pad, apply an approved trim adhesive such as 3M General Trim Adhesive, No. 8080, or equivalent, along top edge of door

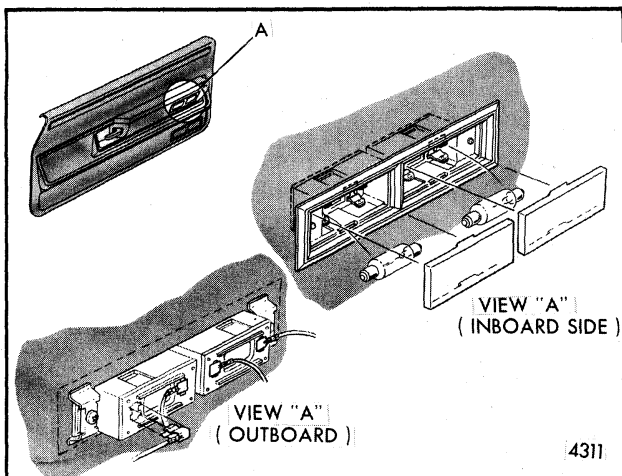


Fig. 5-13-Courtesy Lamp Removal and Installation

inner panel and insulator pad at areas where original adhesive is visible. Then press pad in place aligning holes to piercings in door inner panel.

Installation

Before installing door trim assembly, check that all trim retainers are securely installed to the assembly and are not damaged; where required, replace damaged retainers as follows:

1. Start retainer flange with 1/4 cut-out (View F, Fig. 5-12) into attachment hole in trim assembly; then rotate retainer until flange with 1/4 cut-out is inside of attachment hole.
2. Connect electrical components where present.
3. To install door trim assembly, pull door inside handle inward; then position trim assembly to inner panel inserting door handle through handle hole in panel.
4. Position trim assembly to door inner panel so trim retainers are aligned with attaching holes in panel and tap retainers into holes with a clean rubber mallet.
5. Install all previously removed items (if so equipped), including:
 - a. Pull Handle Attaching Screws and Escutcheons
 - b. Remote Control Mirror Cable and Escutcheon
 - c. Door Switch Plates
 - d. Remote Control Handle Cover Plate

NOTE: On styles with adjustable trim supports at beltline, the door trim assembly can be adjusted in or out so as not to restrict door window operation (Sec. A-A, Fig. 5-12).

DOOR TRIM PANEL MOLDINGS AND APPLIQUES

Door trim moldings and appliques are secured from the outboard side of the door trim panel with several types of metal fasteners (Fig. 5-14) or bend-over tabs.

Removal and Installation

1. Remove door trim assembly as previously described.

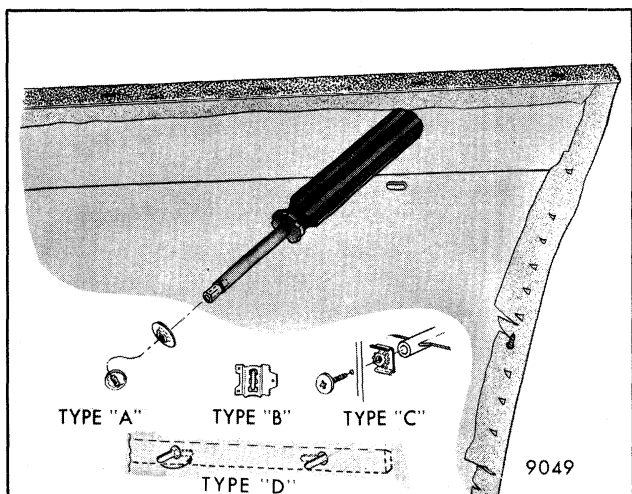


Fig. 5-14-Door Trim Pad Molding and Applique Removal

2. For removal of type "A" fasteners (Fig. 5-14), use tool J-23554 or equivalent.
3. To remove type "B" fasteners (Fig. 5-14), carefully pry-up on fastener until there is sufficient working space to insert wire cutter; then cut fastener and discard.
4. For removal of type "C" fasteners (Fig. 5-14), use a cross head type screwdriver.
5. For removal of type "D" fasteners, use a thin-bladed tool to straighten bend-over tabs.
6. To install, reverse removal procedure.

CENTER PILLAR TRIM - All Styles, Except "6CB69" Style

Removal and Installation

1. Remove front and rear door sill plates.
2. On hardtop styles, remove attaching screw securing center pillar trim panel to center pillar brace (Fig. 5-15). Then remove trim from pillar by lifting straight-up to clear retaining flanges.
3. On closed styles, remove attaching screws securing upper trim to center pillar. To remove lower trim after upper trim has been removed, lift trim straight-up to clear retaining flanges on center pillar.
4. To install, reverse removal operations.

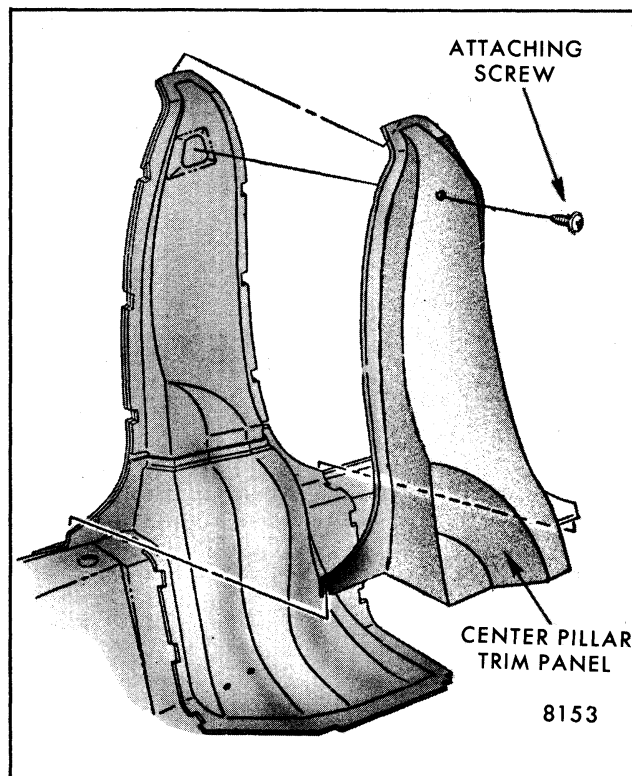


Fig. 5-15-Center Pillar Trim Attachment Hardtop Styles

CENTER PILLAR UPPER AND LOWER TRIM - "6CB69" Style

Removal and Installation

1. Remove center pillar upper trim by gently pry-

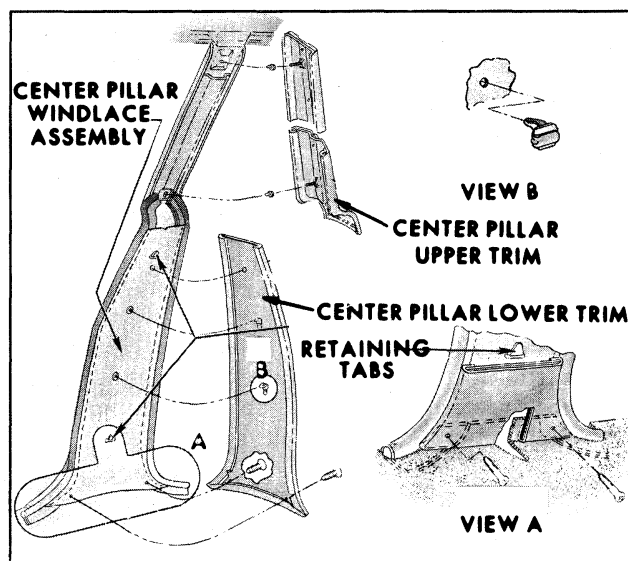


Fig. 5-16-Center Pillar Trim Attachment - Typical Installation

ing serrated attaching nails from center pillar (Fig. 5-16).

2. Remove front and rear door sill plates.
3. Remove attaching screws from center pillar lower trim.

4. With flat-bladed tool, such as J-9886 or equivalent, carefully pry attaching clips from center pillar and remove lower trim.
5. To install, reverse removal procedure.

EXTERIOR MOLDINGS

DESCRIPTION

The door exterior moldings are secured to the body by any one or a combination of the following attachments. Fig. 5-18 illustrates the various door molding attachments.

- A. Adhesive backed.
- B. Weld stud retained plastic clip with attaching screws at molding ends (in hem flange).
- C. Attaching screw.
- D. Weld stud retained plastic clip.
- E. Attaching screw.
- F. Spring type (self-retained) - "B" styles.
- G. Spring type (self-retained) - "H and X" styles.
- H. Integral stud with attaching nut.

Figure 5-17 identifies all typical door exterior moldings by number. Molding installation chart (Figure 5-19) identifies molding description and specific attachment.

To use molding installation chart, use the following procedure.

1. Using typical exterior molding illustration (Fig. 5-17), locate number of specific molding(s).
2. Locate molding number on installation chart. Chart will then identify molding name, attachment(s) reference to Fig. 5-18 and specific style (if difference in attachment exists).

GENERAL PRECAUTIONS

When removing or installing any door exterior molding, certain precautions should be exercised.

1. Adjacent finishes should be protected with masking tape to prevent damage to finish.
2. Proper tools and care should be employed to guard against molding damage.
3. Holes in body panels for screws, bolts, or clips that would permit water entry into the body interior must be sealed with body caulking compound or presealed screws, nuts, or clips.

MOLDING CLIP REPLACEMENT

If a weld stud on an outer panel becomes damaged or broken off, use the following procedure.

1. Drill a small hole in the panel adjacent to original weld stud location.
2. Insert a self-sealing screw through original clip and into outer panel or replace damaged weld stud with self-sealing screw- type weld stud.

ADHESIVE BODY SIDE MOLDING

If, for any reason, an adhesive backed molding is partially loosened or removed from a door panel, it should be replaced as follows:

NOTE: To insure quality adhesion, panel surface must be warm, 70 to 90 degrees F, clean and wax free during installation of molding.

1. Clean affected panel by washing with soap and water and wipe dry.
2. Mark proper alignment position with a length of cloth body tape, using adjacent moldings as a guide if applicable (View "A", Fig. 5-20).
3. Wipe molding attachment area of panel and adhesive side of molding with naphtha.

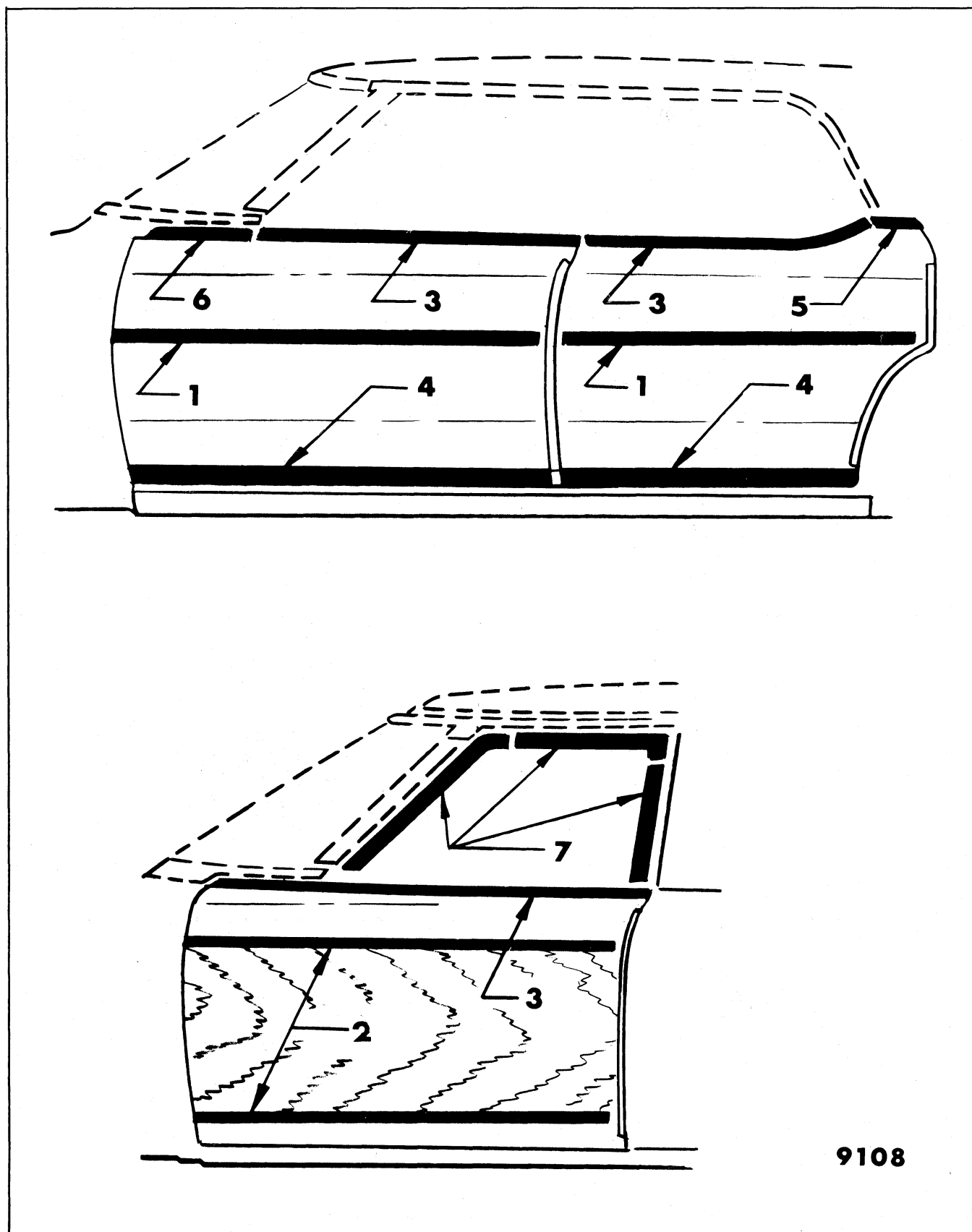


Fig. 5-17 - Typical Door Exterior Moldings

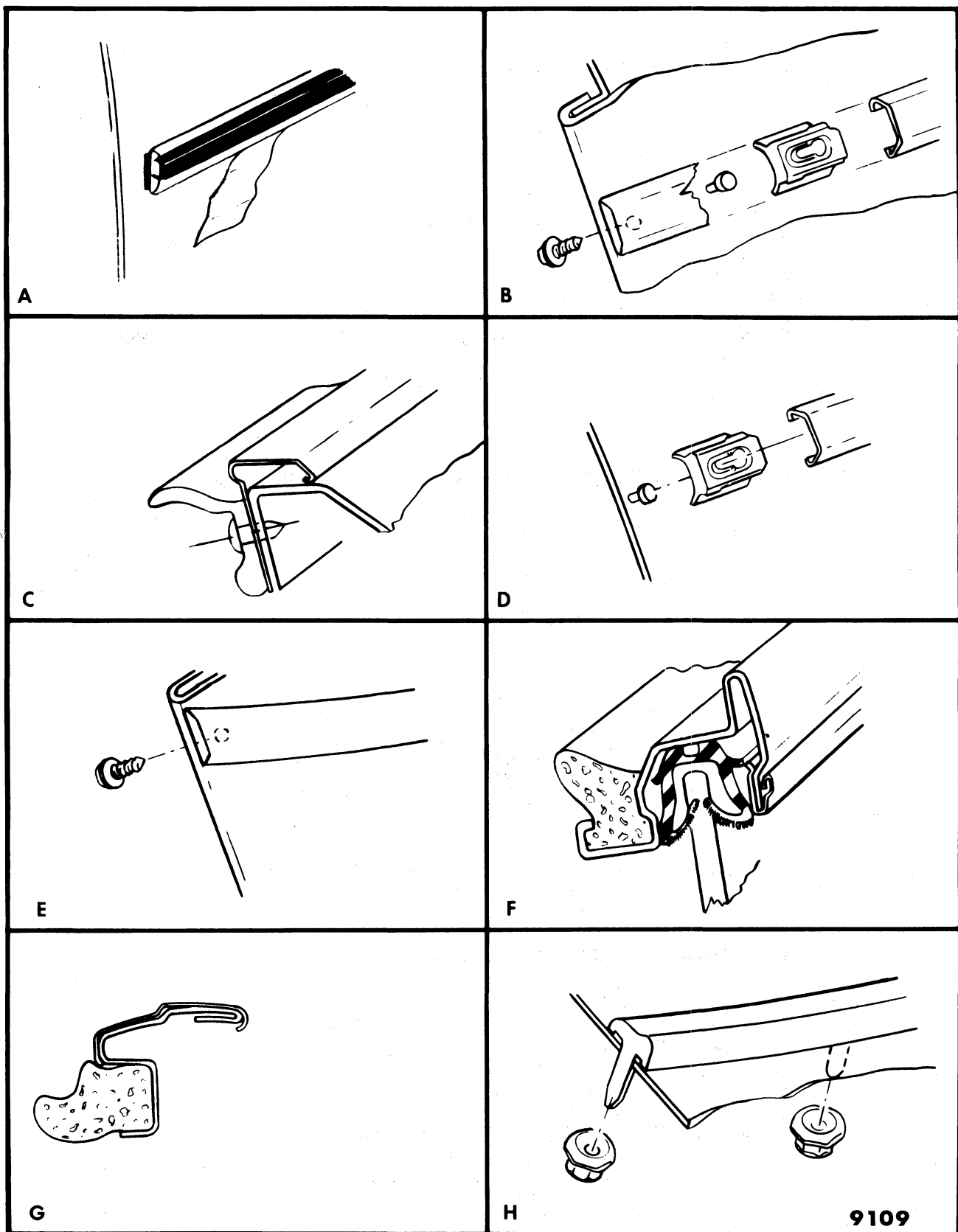


Fig. 5-18 - Door Molding Attachments

MOLDING REFERENCE NUMBER	MOLDING DESCRIPTION (USAGE)	ATTACHMENT REFERENCE
1.	BODY SIDE (FRONT AND REAR) IF ATTACHING SCREWS VISIBLE IN HEM FLANGE	A B
2.	BODY SIDE - UPPER AND LOWER-WOOD GRAIN TRANSFER FINISHING (FRONT AND REAR)	B
3.	DOOR BELT REVEAL (FRONT AND REAR) - INTEGRAL PART OF OUTER BELT SEALING STRIP DOOR BELT REVEAL (FRONT AND REAR) - SEPARATE FROM OUTER BELT SEALING STRIP	C D
4.	DOOR OUTER PANEL - LOWER (FRONT AND REAR)	B
5.	REAR DOOR BELT REVEAL - REAR	H
6.	FRONT DOOR BELT REVEAL - FRONT	E
7.	DOOR WINDOW UPPER FRAME SCALPS (FRONT AND REAR) - "B-35,45,69" STYLES "H & X" STYLES (LESS "H-07")	F G

9110

Fig. 5-19 - Door Molding Installation Chart

NOTE: If separation occurs between adhesive backed tape and molding (tape remains on body panel), do not remove tape from body. Naphtha wipe back of molding and adhesive tape and proceed with step 4.

4. Hold molding in its proper position with strips of cloth or masking tape every 6 to 8 inches, View "B", Figure 5-20. If shop temperature is below 70 degrees F, warm the body panel immediately prior to adhesive application with a heat lamp or heat gun while proceeding with step 5.
5. Loosen top of tape strips holding molding in

position. Hinge molding downward to gain access to back of molding (View "C", Fig. 5-20), then using a circular motion, quickly apply a thin film of 3M Super Weatherstrip Adhesive or equivalent to the adhesive portion of the molding.

6. Immediately align molding to previously installed tape guideline and firmly press in place. Hold in place with tape strips.
7. Allow to set 15 minutes. If clean up of cement squeeze-out is required, use a cloth dampened slightly with naphtha; then remove tape strips and tape guideline.

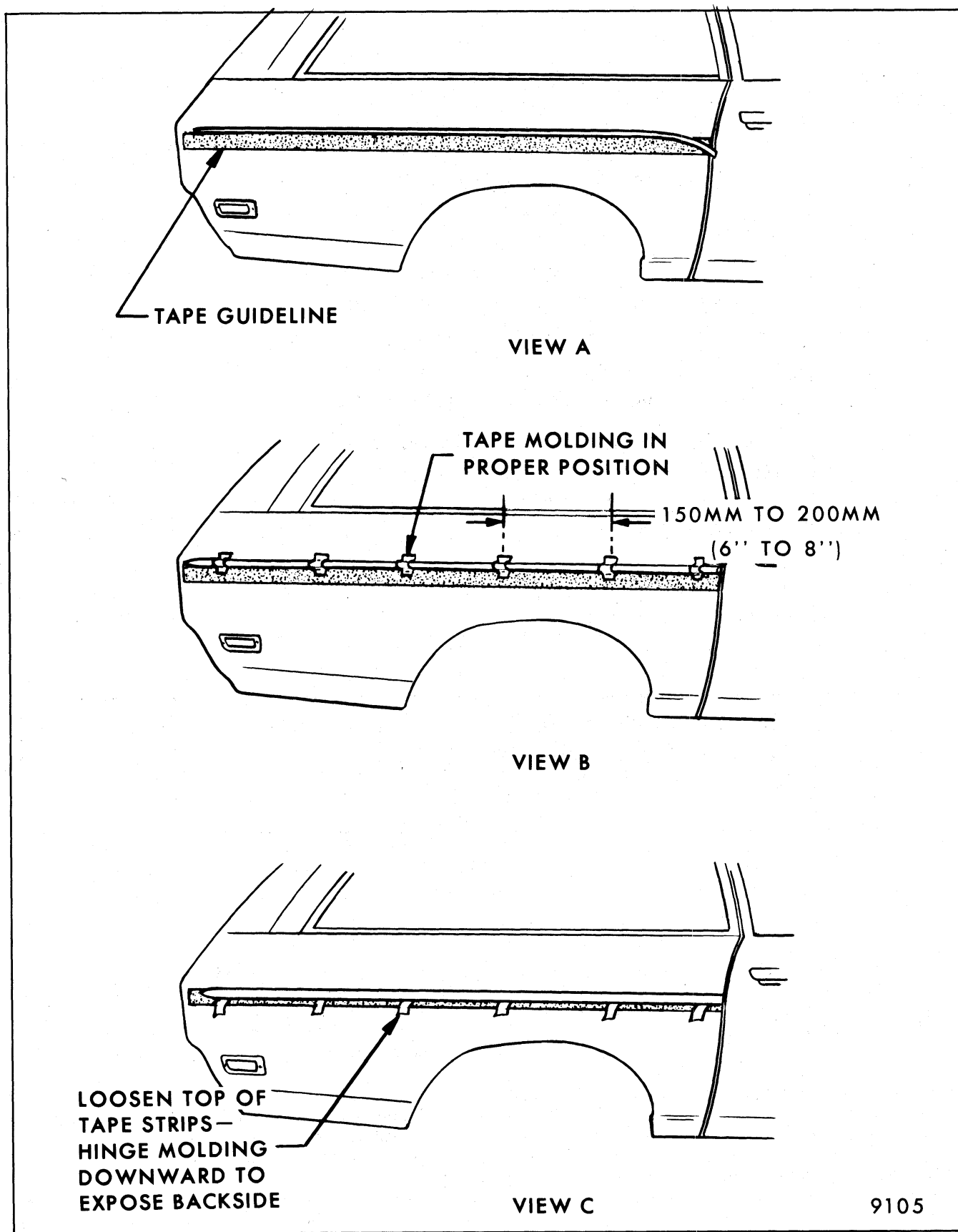


Fig. 5-20 - Adhesive Body Side Molding Replacement

FRONT AND REAR DOORS

INTRODUCTION

This portion of the manual contains the service operations that are common to front and rear doors and components. Refer to the "Door Index" to locate a specific procedure.

FRONT AND REAR DOOR WEATHERSTRIPS

Both the front and rear doors use nylon fasteners to retain the door weatherstrips. The fasteners are a component part of the weatherstrip and secure the weatherstrip to the door by engaging piercings in the door panels. The serrations on the fastener also seal the openings from water entry (Fig. 5-21). On closed styles, nylon fasteners are used below the beltline only. Weatherstrip adhesive retains the weatherstrip around the door upper frame (Fig. 5-22). On all styles, in addition to the fastener, weatherstrip adhesive is used at the beltline and down the front door hinge pillar.

To disengage nylon fasteners from door panel piercings use tool J- 21104 or equivalent (Fig. 5-21). This tool permits removal of the weatherstrip without damaging the serrations on the fasteners so that the weatherstrip can be reinstalled if desired. Although a replacement door weatherstrip will include nylon fasteners, individual fasteners are also available as service parts.

Removal

1. On all hardtop and convertible styles, remove upper portion of door trim pad to gain access to weatherstrip fasteners hidden under trim assembly and remove fasteners (Fig. 5-23).
2. Use a flat-bladed tool to break cement bond between door and weatherstrip. A tool applicable to this usage can be fabricated from tool J-21104 or equivalent (Fig. 5-24). On all styles, weatherstrip adhesive is used for a distance of 9" on door lock pillar and the entire length of the front door hinge pillar (Fig. 5-22). In addition, on closed styles, weatherstrip is retained by weatherstrip adhesive completely around door upper frame.
3. On all styles, use tool J-21104 or equivalent to disengage weatherstrip from door where weatherstrip is retained by nylon fasteners.

Installation

1. If previously removed weatherstrip is to be rein-

stalled, inspect nylon fasteners and replace those that are damaged.

2. Clean off old weatherstrip adhesive from door.
3. On closed styles, apply black weatherstrip adhesive around door upper frame (Fig. 5-22).
4. On styles without door upper frames, position weatherstrip to door and install plastic fasteners at front and rear ends of weatherstrip.
5. On styles with door upper frames, position weatherstrip to door as follows:
 - a. On front doors, locate weatherstrip from rear upper corner.
 - b. On rear doors, locate weatherstrip from molded front upper corner.
6. Tap nylon fasteners into door piercing using a

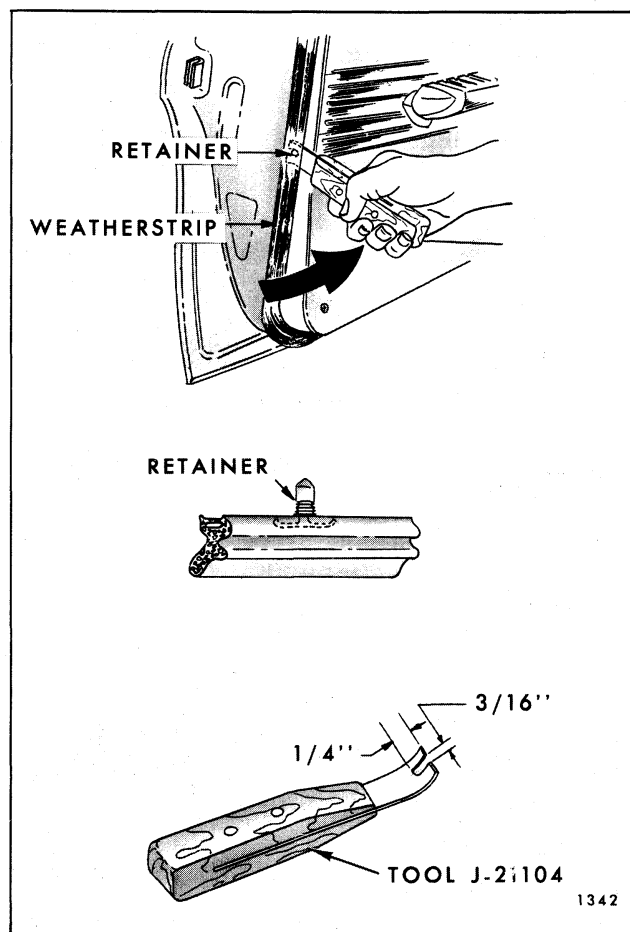


Fig. 5-21-Door Weatherstrip Removal

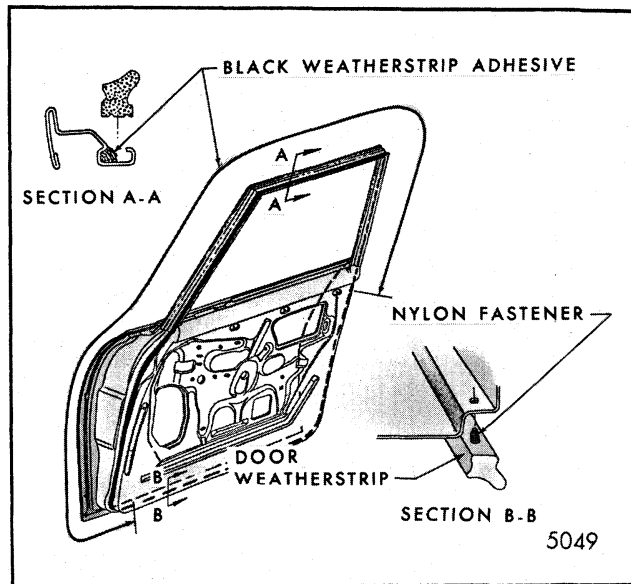


Fig. 5-22-Door Weatherstrip - Closed Styles

hammer and blunt caulking tool.

7. After all fasteners have been installed on sedan styles, apply weatherstrip adhesive between door and weatherstrip outboard surface at the following locations:
 - a. For 5" around rear upper corner of front door upper frame and/or 9" down door lock pillar starting at beltline and down entire hinge pillar facing.
 - b. On sedan rear doors, 9" down both door lock pillar and door hinge pillars starting at beltline.

CAUTION: If weatherstrip becomes damaged at fastener location and will not retain fastener, remove fastener and secure

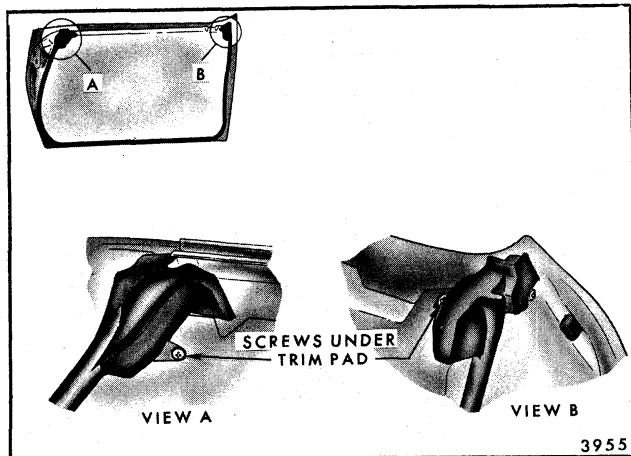


Fig. 5-23-Door Weatherstrip - Hardtop Styles

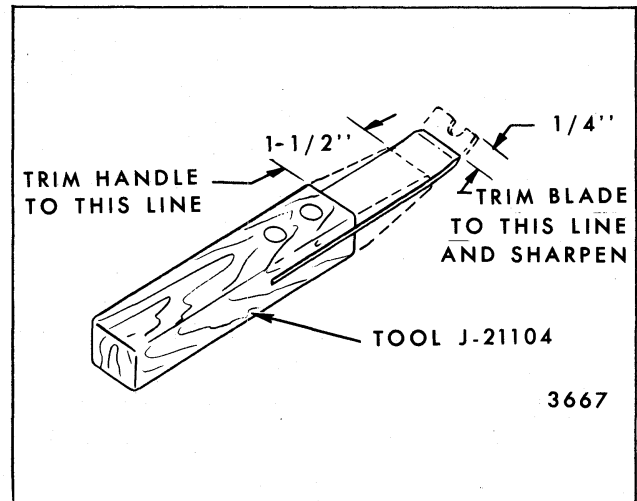


Fig. 5-24-Weatherstrip Removal Tool

weatherstrip to door with weatherstrip adhesive. If more than two consecutive fastener locations become damaged, replace weatherstrip.

Although weatherstrip adhesive is specified only at specific locations, it can be used at any point where additional retention or sealing is required.

WINDOW BELT SEALING STRIPS

Door window belt sealing strips are used to form a seal between the door inner and outer panels and the window at the beltline. The construction and attachment of these strips vary with the body style involved.

On styles with a door window belt reveal molding, the molding is either an integral part of the outer strip assembly or an independent molding attached to the door outer panel. Refer to the "Exterior Moldings" portion of this section for specific molding attachment and removal procedures.

On styles which utilize the belt reveal molding and outer strip assembly (stapled together at manufacture), the entire assembly is available as a service part.

On most "B, C, E" and Pontiac "F" styles, the molding is installed over the outer sealing strip and must be removed prior to strip removal (moldings and outer sealing strips are serviced independently).

On styles without door window belt reveal moldings, the outer strip assembly is an independent part that is secured to the door outer panel return flange by clips or screws.

NOTE: To remove strip assemblies, glass must be low enough to gain access to the attachments. In many cases, this will require removal or adjustment of window lower stop supports to permit further lowering of window assembly.

Removal and Installation

1. On styles with screw retained strip assemblies, remove strip assembly by removing attaching screws.
2. On "H and X" body styles which utilize clip retained outer strip assemblies, remove strip assembly as follows:

- a. Apply cloth-backed tape as a protective cover over painted surface of door outer panel adjacent to strip assembly.
- b. Using a flat-bladed tool that is slotted to fit over tang of clip, disengage clips from slots in door panel return flange as shown in Figure 5-25.

NOTE: To fabricate strip assembly removal tool, make a 1/4" wide by 3/8" deep slot in a flat-bladed headlining inserting tool (tool J-2772 or equivalent).

- c. To install strip assembly, position strip so that the tangs of each clip start into slot in door panel; then engage clips by pressing downward. Prior to installation, re-form tangs on clip to assure positive retention when installed.

SIDE ROOF RAIL WEATHERSTRIP AND RETAINER

The side roof rail weatherstrip is sealed to a weatherstrip retainer which, in turn, is sealed to the body by a nitrile foam material (item 1, Fig. 5-26) bonded to

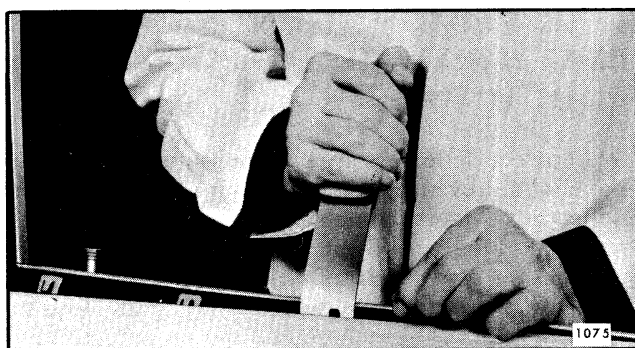


Fig. 5-25-Clip Retained Belt Sealing Strip Removal

the retainer. Additional pumpable sealer is applied in corner areas to assure a good seal against air and water. Plastic fasteners retain the ends of the weatherstrip to the body.

Side Roof Rail Weatherstrip (Retainer) Adjustment

The side roof rail weatherstrip can be adjusted either inboard or outboard to obtain a better seal with the door or quarter window by repositioning the weatherstrip retainer.

1. Remove the weatherstrip from the retainer as subsequently described and loosen retainer attaching screws.
2. Adjust retainer inboard or outboard as required and replace screws. Reinstall weatherstrip and seal with a "pumpable" sealer.

For proper relationship of weatherstrip to door window, refer to "Door Window Adjustments".

NOTE: Major retainer adjustments will require resealing retainer to body at upper corners of retainer(s) and full length of rear body lock pillar retainer on "A" four-door styles as described in step 2 of weatherstrip installation procedure (item 2, Fig. 5-26).

If additional inboard or outboard adjustment of the retainer is required, it can be accomplished by either elongating the adjusting slots in the retainer or repositioning the retainer and drilling new attaching holes in the rail or pillar assembly.

Removal

1. Remove plastic fasteners at front and rear of side roof rail weatherstrip (Fig. 5-26 is typical of all styles at front hinge pillar) with tool J-21104 or equivalent.
2. Beginning at the front body hinge pillar, carefully pull weatherstrip out of retainer while breaking sealer bond between weatherstrip and retainer with a flat-bladed tool. A tool for this use can be fabricated from tool J-21104 or equivalent as shown in Figure 5-24.

CAUTION: This operation must be performed carefully to prevent damaging side roof rail weatherstrip.

3. With weatherstrip removed, screws securing weatherstrip retainer to side roof rail are exposed. Mark position of retainer on rail or pillar and remove screws from retainer.

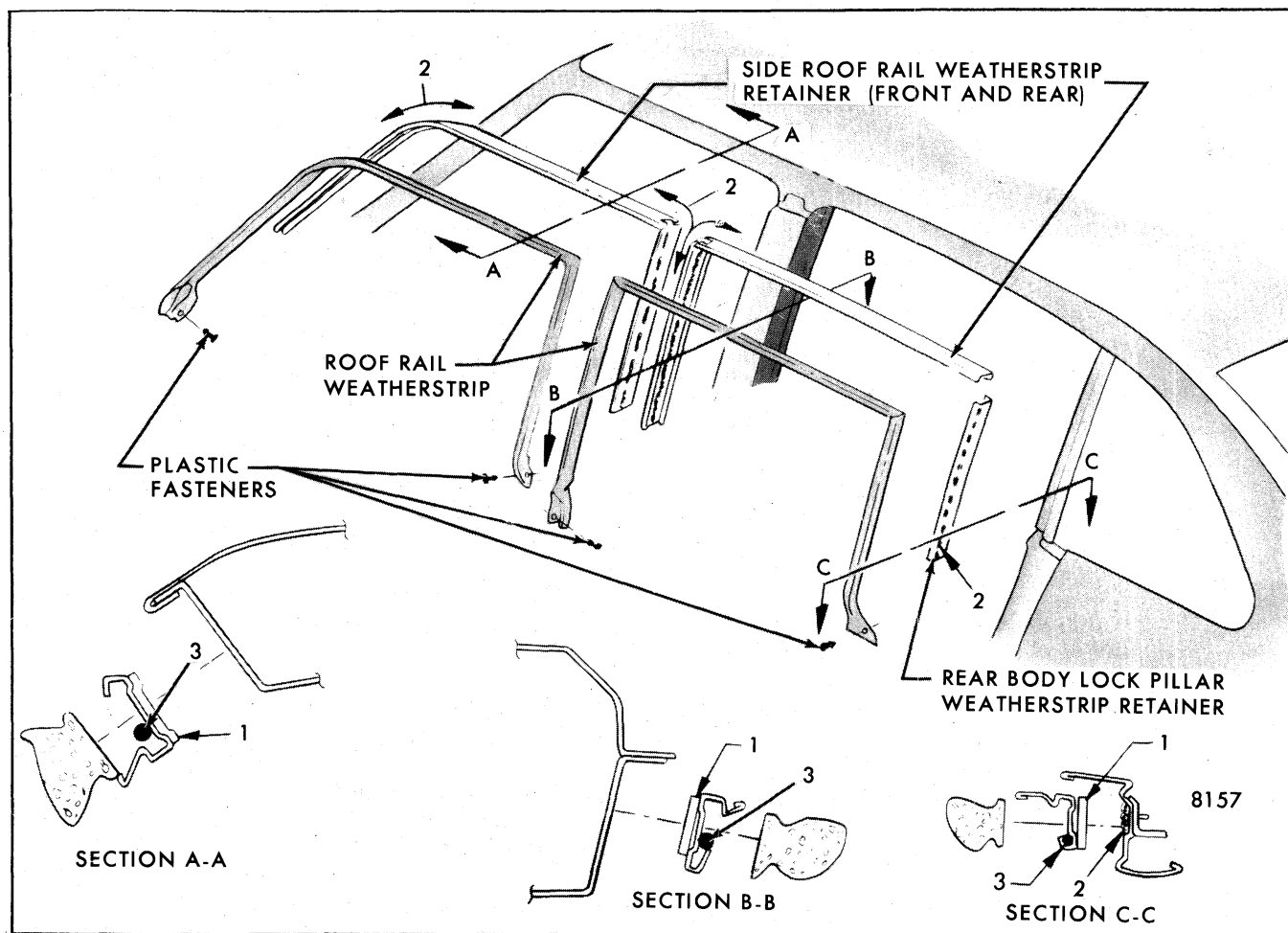


Fig. 5-26-Side Roof Rail Weatherstrip and Weatherstrip Retainer - "A" Four-Door Styles Shown, Other Styles Similar

Installation

1. Scrape off any excess sealer from weatherstrip retainer.
2. Apply a continuous bead of a "pumpable" type body caulking compound 4" rearward and 4" down from front and rear upper corner of retainer that mates with side roof rail, and along full length of rear body lock pillar retainer on "A" four-door styles (item 2, Fig. 5-26). Apply bead outboard of attaching screw holes.
3. Position retainer to body and install attaching screws.
4. Apply a continuous bead of "pumpable" sealer to inboard flange of weatherstrip retainer (item 3, Fig. 5-26). Then apply black weatherstrip adhesive to the front and rear end details of the side roof rail weatherstrip.
5. Position front end of weatherstrip to body and install plastic fasteners. Using a flat-bladed tool,

engage weatherstrip with retainer, inboard lip first; then outboard lip (refer to Sections "A-A", "B-B" and "C-C", Fig. 5-26).

NOTE: Replacement plastic fasteners are available as a service part.

6. After weatherstrip has been installed along length of retainer, install plastic fastener at rear end of weatherstrip on styles so equipped.

INNER PANEL WATER DEFLECTOR - All Except "H" Styles

Waterproof deflectors are used to seal the door inner panel and prevent entry of water into the body. The deflector is secured by a string-loaded sealing material along both front and rear edges and by the application of waterproof sealing tape at front and rear lower corners. Whenever work is performed on front or rear doors where the water deflector has been disturbed, the deflector must be properly sealed and taped to the inner panel to prevent waterleaks

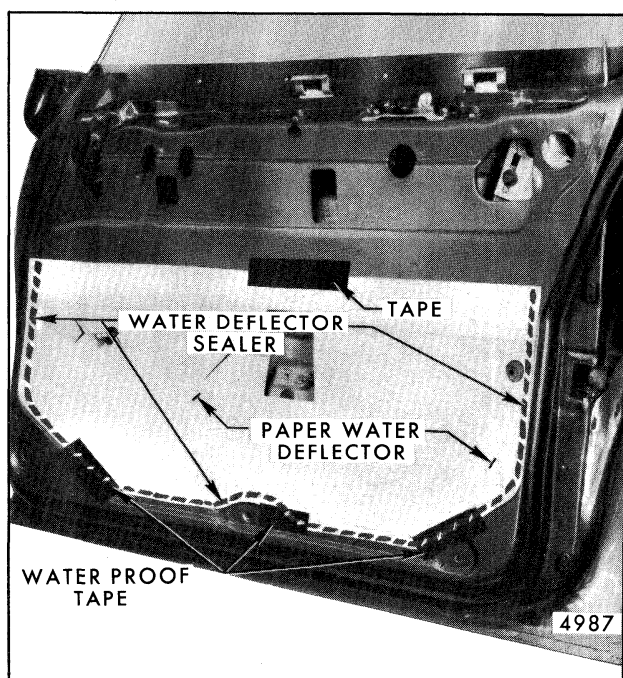


Fig. 5-27-Door Inner Panel Sealing

(refer to Fig. 5-27). For service sealing, body caulking compound or strip caulking is recommended if additional sealing material is required.

When access to the inner panel is required to perform service operations, the deflector may be completely or partially detached from the inner panel. If the existing water deflector is damaged so that it will not properly seal the door, replacement of the deflector is required. Water deflector roll stock is available as a service part.

The following procedure covers complete removal and installation of the water deflector. If only partial removal of the deflector is required, perform only those steps which are necessary to expose the required area of the door inner panel.

Removal - Refer to Figure 5-27

1. Remove the door trim assembly.
2. Remove waterproof body tape securing top of water deflector to door inner panel.
3. Using a flat-bladed tool such as a putty knife, or side roof rail weatherstrip removal tool (or equivalent) as described in Figure 5-24, carefully break sealer bond between water deflector and door inner panel down both sides of deflector. Make certain tool blade is between inner panel and string that is embedded in sealer.

4. When seal has been broken down both sides of deflector, carefully remove tape from inner panel at lower corners of water deflector. Disengage water deflector from inner panel drain slot and remove deflector.

Installation

1. Inspect water deflector and, where necessary, repair any tears or holes with waterproof body tape applied to both sides of deflector.
2. If a new deflector is to be installed, use old deflector as a template.
3. Position water deflector to door inner panel and insert lower edge of deflector in retaining slot. Then firmly roll or press edges of deflector to obtain a good bond between deflector and door inner panel.

If old sealer does not effect a satisfactory seal, apply additional body caulking compound or strip caulking to inner panel at unsealed areas.

4. Seal lower corners of deflector by reapplying previously removed tape or new pieces of 2" or 2-1/2" waterproof body tape.
5. On styles with door inner panel hardware attachments that are below and outboard of water deflector, seal attaching screw head and panel piercing with body caulking compound.

SPRING CLIPS

Spring clips are used to secure handle connecting rods and inside locking rods to door lock levers and handle levers. A slot in the clip provides for disengagement of the rod.

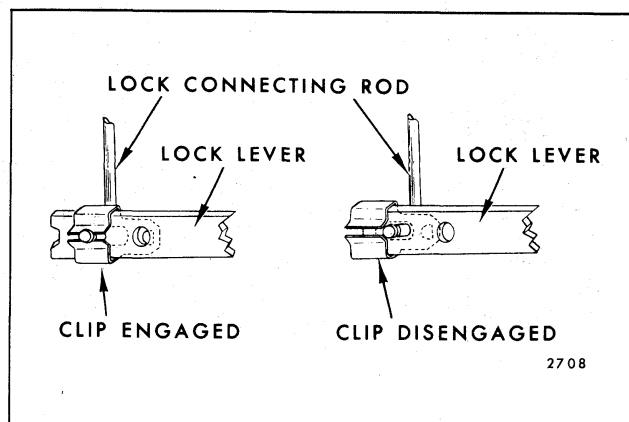


Fig. 5-28-Spring Clip Disengagement

Removal and Installation

To disengage a spring clip, use a screwdriver, or other suitable thin-bladed tool, to slide clip out of engagement as shown in Figure 5-28 and disengage connecting rod. To install, press clip fully on lever, then press rod through hole in lever until fully engaged by clip.

On "H" styles, remove door outside handle to lock push rod access hole plug to gain access to spring clip (Fig. 5-29).

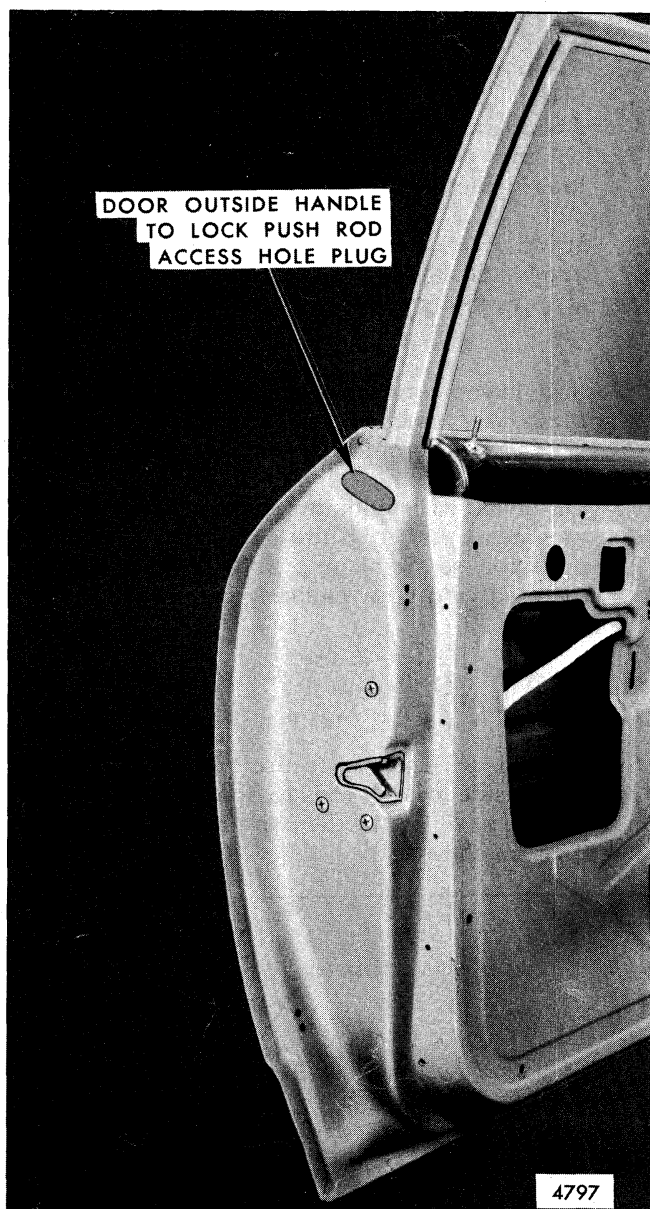


Fig. 5-29-Outside Handle Push Rod Access Hole Plug - "H" Styles

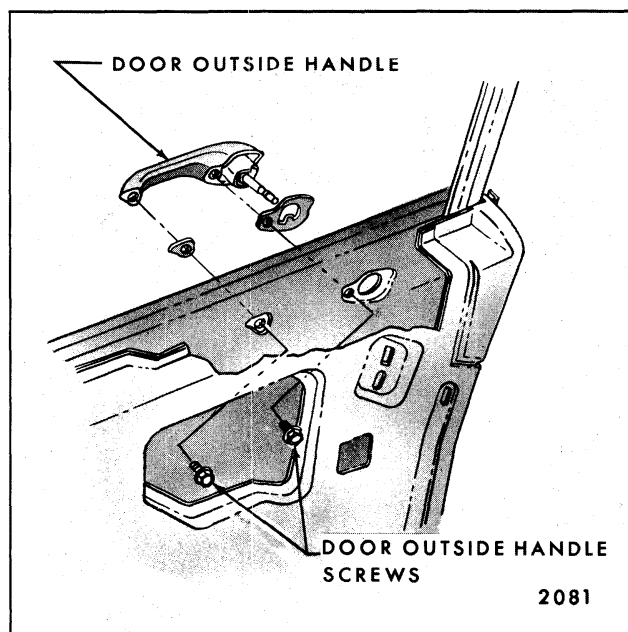


Fig. 5-30-Outside Handle Removal (Push-Button Type)

OUTSIDE HANDLES

There are three basic types of door outside handles: push-button, lift-bar and pull-out. However, the removal and installation procedure is similar.

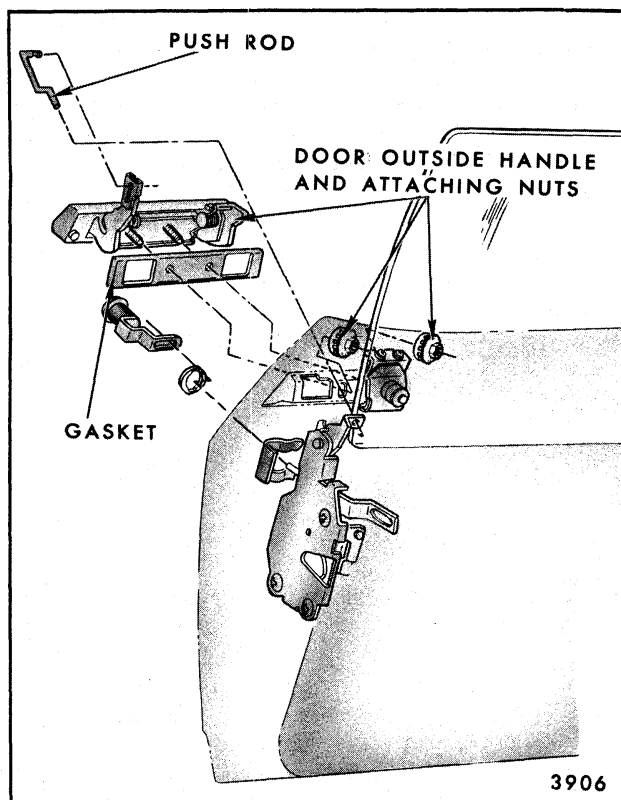


Fig. 5-31-Outside Handle Removal (Lift Bar Type)

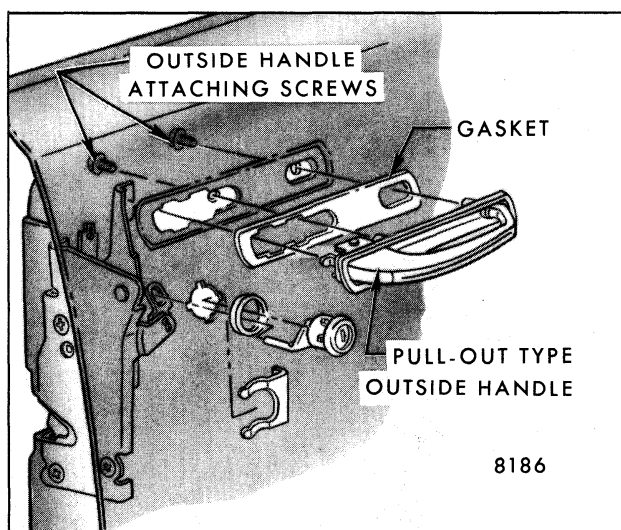


Fig. 5-32-Outside Handle Removal (Pull-Out Type)

Removal and Installation - Refer to Figures 5-30, 5-31 and 5-32

1. Raise door window. Remove door trim assembly and detach upper rear corner of inner panel water deflector sufficiently to gain access to outside handle attaching nuts.
 - a. On "F" styles, remove rear guide upper bracket to inner panel and guide assembly attaching screws (item 6 and 7, Fig. 5-59)

and remove guide bracket from door. Then, working through access hole, disconnect door outside handle to lock push rod at handle assembly (Fig. 5-31).

- b. On styles with optional fiber optic accessory, disconnect fiber optic wire harness at door guard beam prior to removal of the handle (Fig. 5-33).
 - c. On "A-29 and 35" styles, remove rear guide (item 7, Fig. 5-48) to provide easier access to handle.
2. On all other styles, remove handle attaching nuts (or screws) through access hole and remove door handle and gaskets from outside of body.
 3. To install, reverse removal procedure.

DOOR OUTSIDE HANDLE DISASSEMBLY - All Push Button-Type Handles

1. Remove door outside handle as previously described.
2. Depress retainer slightly and rotate 1/4 turn in either direction. Remove retainer, spring, push button and shaft and sealing washer from handle (refer to Fig. 5-34).

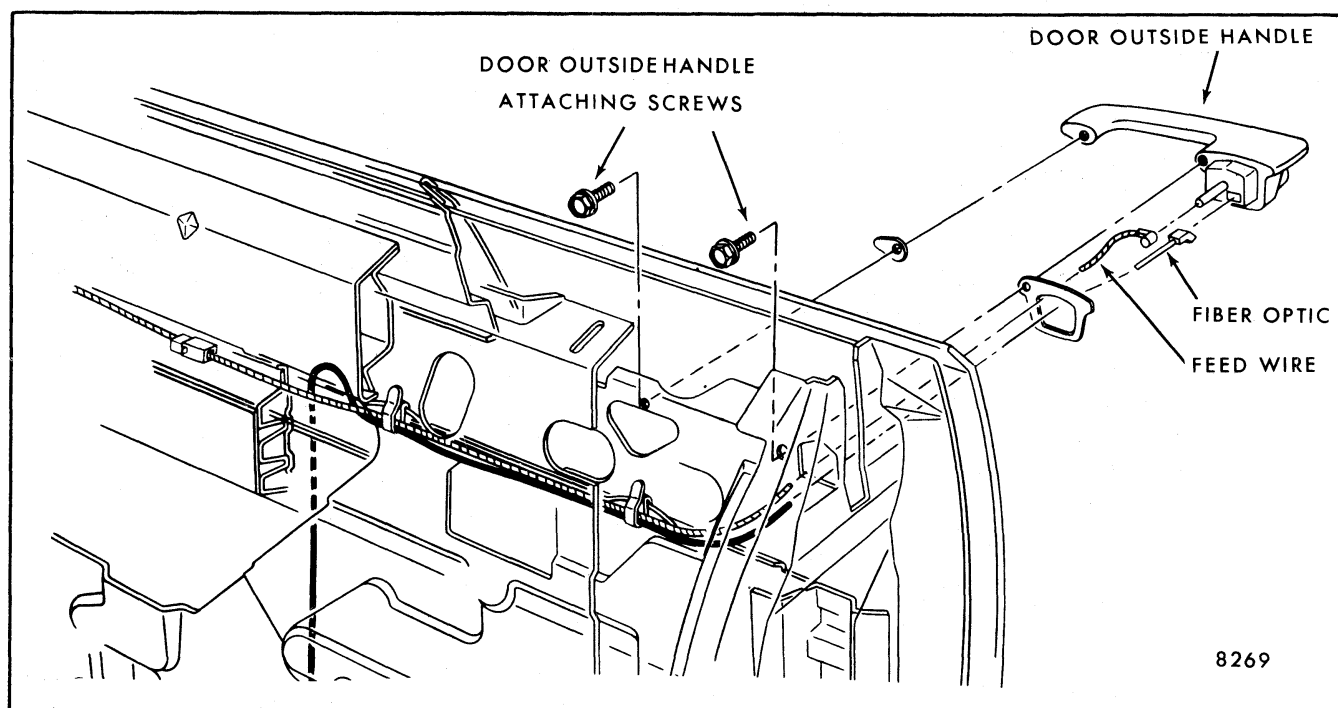


Fig. 5-33-Illuminated Door Handle - "B and C" Styles

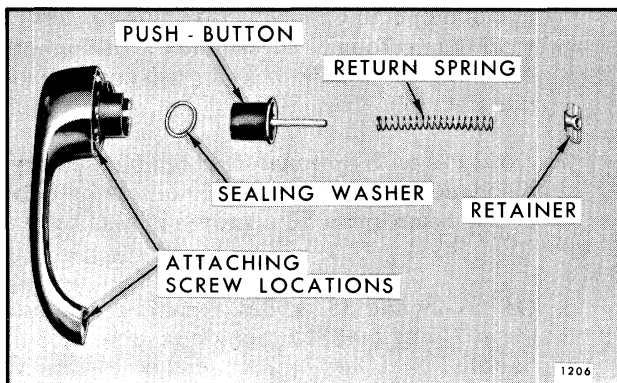


Fig. 5-34 Outside Push-Button Handle Disassembly

NOTE: "B and C" style rear door handle push buttons, springs and retainers are serviced as an assembly. The die cast handle is serviced separately. Front door handle components are serviced separately as shown in Figure 5-34. Lift-bar and pull-out handles are serviced as an assembly.

3. To assemble, reverse disassembly procedure.

DOOR LOCK STRIKER

The front and rear door lock striker consists of a single metal bolt and washer assembly that is threaded into a tapped, floating cage plate located in the body lock pillar. With this design, the door is secured in the closed position when the door lock fork bolt snaps over and engages the striker bolt.

Alignment and Adjustments

1. To adjust striker up or down, or in or out, insert tool J- 23457, BT-7107 or equivalent into the star-shaped recess in the head of the striker and loosen striker bolt. Shift striker as required, then tighten. Torque striker bolt 34 to 46 foot-pounds.
2. To determine if striker fore or aft adjustment is required, proceed as follows:
 - a. Make certain door is properly aligned.
 - b. Apply modeling clay or body caulking compound to lock bolt opening as shown in Figure 5-35.
 - c. Close door only as far as necessary for striker bolt to form an impression in clay or caulking compound as shown in Figure 5-35.

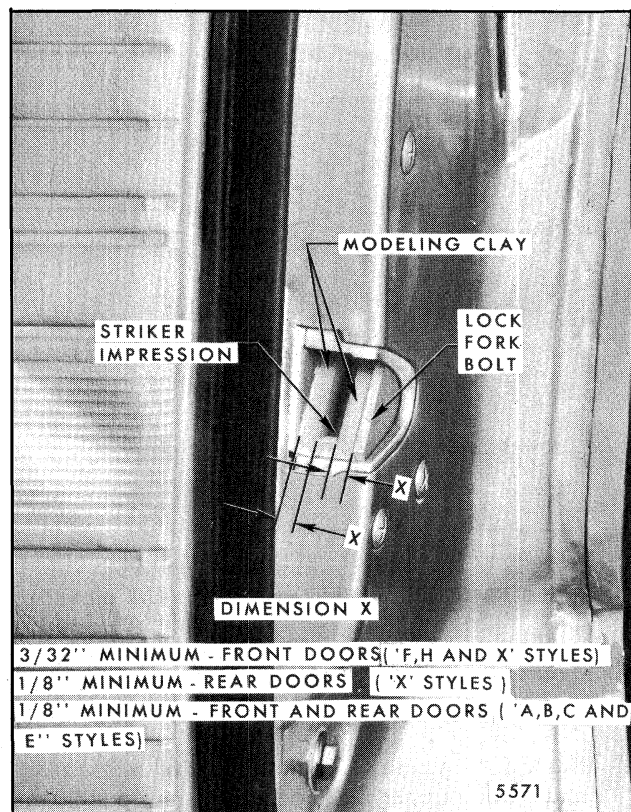


Fig. 5-35-Lock-to-Striker Fore and Aft Adjustment

NOTE: Do not close door completely. Complete door closing will make clay removal very difficult.

- d. Measure striker impressions as follows: striker head should be centered fore and aft as shown, however, some tolerances are allowed. In any alignment, it is important that minimum dimensions as outlined in Figure 5-35 be strictly maintained. The following spacers are available as service parts and can be used individually or in combination to achieve the desired alignment.
 1. 5/64" spacer - Part No. 9827154 or equivalent
 2. 5/32" spacer - Part No. 9827155 or equivalent

Removal and Installation

1. Mark position of striker on body lock pillar using a pencil.
2. Insert tool J-23457, BT-7107 or equivalent into the star-shaped tool recess in the head of the striker bolt and remove striker (refer to Fig. 5-36).

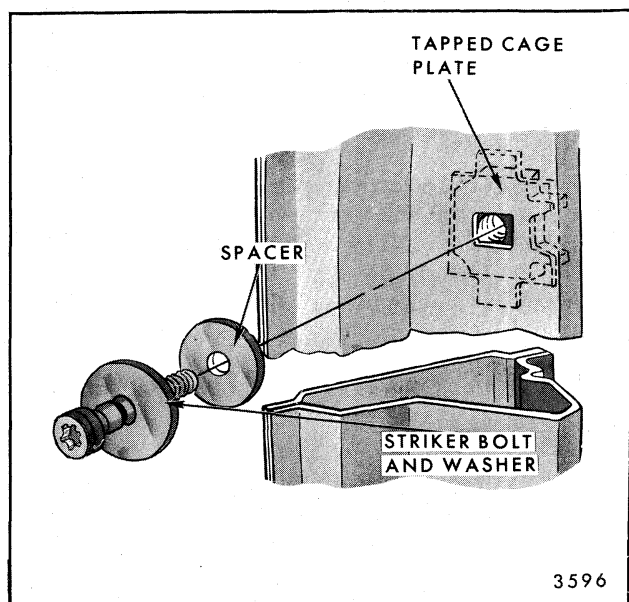


Fig. 5-36-Door Lock Striker Installation

3. To install, reverse removal procedure. Make certain striker is positioned within pencil mark. If striker is positioned outside of pencil marks, touch-up any exposed unpainted surface on lock pillar adjacent to striker assembly. Torque striker bolt 34 to 46 foot-pounds.

CAUTION: The door lock striker is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

CAUTION: Whenever a door has been removed and reinstalled or realigned, the door should not be closed completely until a visual check is made to determine if lock fork bolt will correctly engage with striker.

ELECTRIC DOOR LOCK SOLENOID

The optional electric door lock system incorporates a solenoid for each door and a control switch for each front door, except "F" styles, which is operated by a switch located on the instrument panel. All doors lock and unlock simultaneously from the control switch(es) or manually from each door in the conventional manner. Each solenoid has an internal circuit breaker which (under extreme conditions)

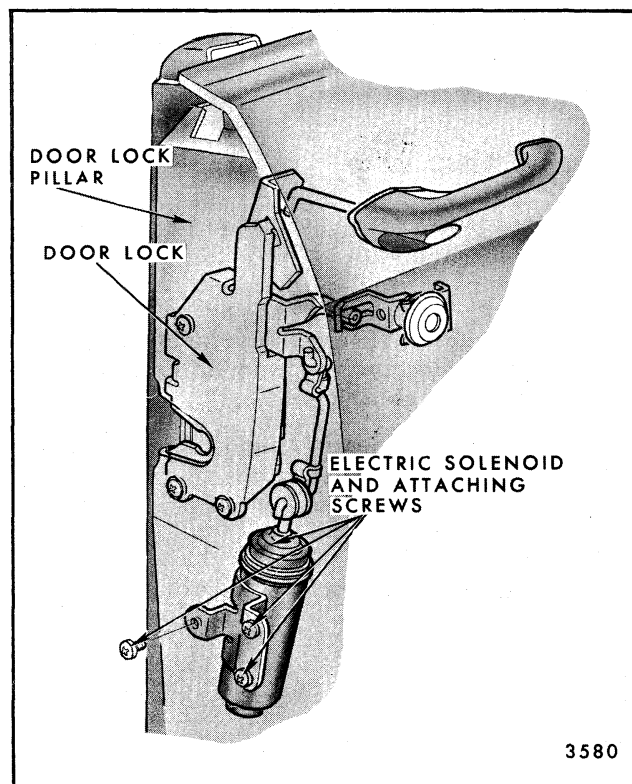


Fig. 5-37-Front Door Lock Electric Solenoid Installation

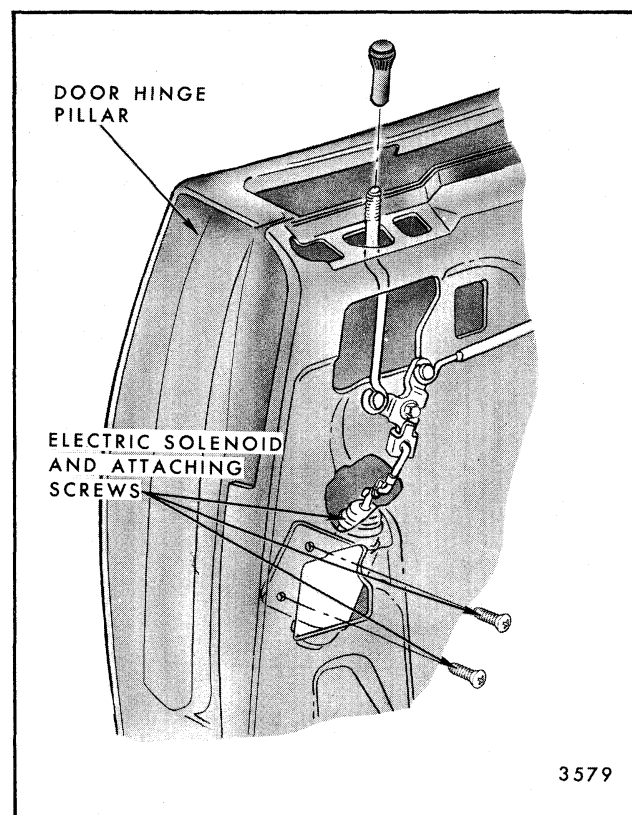


Fig. 5-38-Rear Door Lock Electric Solenoid Installation - "B-C" Styles Shown ("A" Styles Similar)

may require up to three minutes to reset. The door harness is routed in the power window harness conduit.

Removal and Installation

1. Raise door window, remove trim pad and detach inner panel water deflector.
2. On front doors, remove solenoid attaching screws located on lock pillar or inner panel (Fig. 5-37). Disconnect rod and wire harness. Remove solenoid through access hole.
3. On rear doors, remove solenoid attaching screws and connecting link attaching clip on locking rod bellcrank. Disconnect wire harness at solenoid and remove solenoid (Fig. 5-38).
4. To install, reverse removal procedure.

DOOR WINDOW REGULATOR ELECTRIC MOTOR

The optional power-operated window system incorporates an electric motor and an independent control switch for each door and quarter window. The driver's door incorporates a master window control switch permitting operation of all windows from driver's position. Cadillac styles incorporate a window blackout (cut-out) switch. When the blackout switch is in the lock position, the windows will operate only from the master control switch.

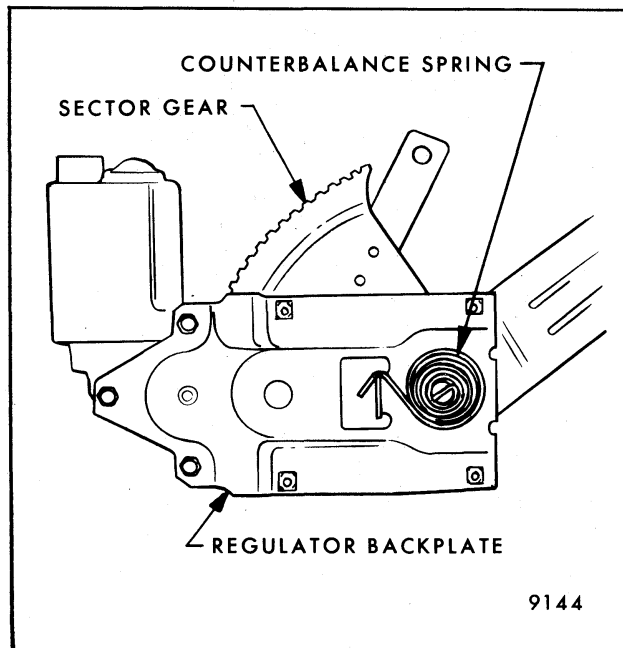


Fig. 5-39-Window Regulator Counterbalance Spring - Typical

The electric motor which powers the window regulator is a twelve-volt, reversible-direction motor with an internal circuit breaker and a self-locking gear drive. The motor is secured to the regulator assembly with bolts.

On all styles, the electric motor can be removed without removing the window regulator if the door glass IS INTACT AND ATTACHED TO THE REGULATOR. If the door glass is broken or detached from the regulator, the regulator must be removed first (except for "B" and "X" rear door regulators without counterbalance springs). Motor removal and installation procedures for both conditions follow.

Removal and Installation - Glass Intact and Attached to Regulator

WARNING: THIS PROCEDURE CAN BE USED ONLY IF DOOR GLASS IS INTACT AND ATTACHED TO THE REGULATOR. THE REGULATOR LIFT ARMS ARE UNDER TENSION FROM THE COUNTERBALANCE SPRING AND THE WEIGHT OF THE DOOR GLASS IS REQUIRED TO NEUTRALIZE THE SPRING DURING MOTOR REMOVAL. IF DOOR GLASS HAS BEEN BROKEN OR REMOVED, THE SECTOR GEAR MUST BE SECURELY FASTENED TO REGULATOR BACK PLATE PRIOR TO MOTOR REMOVAL TO PREVENT SERIOUS INJURY. FOR MOTOR REMOVAL WHEN DOOR GLASS HAS BEEN BROKEN OR REMOVED, REFER TO THE FOLLOWING SECTION OF THIS MANUAL.

1. Remove door trim assembly and inner panel water deflector and raise window. Disconnect harness at motor.
2. On "B" and "X" closed style rear doors, inspect regulator for presence of counterbalance spring (Fig. 5-39). If no spring is present, tape window to frame with pieces of cloth-backed body tape to prevent glass from dropping when regulator motor is removed.

CAUTION: Be sure to perform step 2. The regulator counterbalance spring balances the weight of the door glass. If regulator has no counterbalance spring, glass will drop into door when motor is removed unless glass is taped or blocked in "up" position.

3. Refer to Figures 5-40, 5-41, 5-42, 5-43 and 5-44 and select the appropriate template for locating window motor to regulator attaching bolts by

ALIGN TEMPLATE USING REFERENCE POINTS "A, B, OR C"
WITH REGULATOR LOWER ATTACHING RIVETS ON DOOR

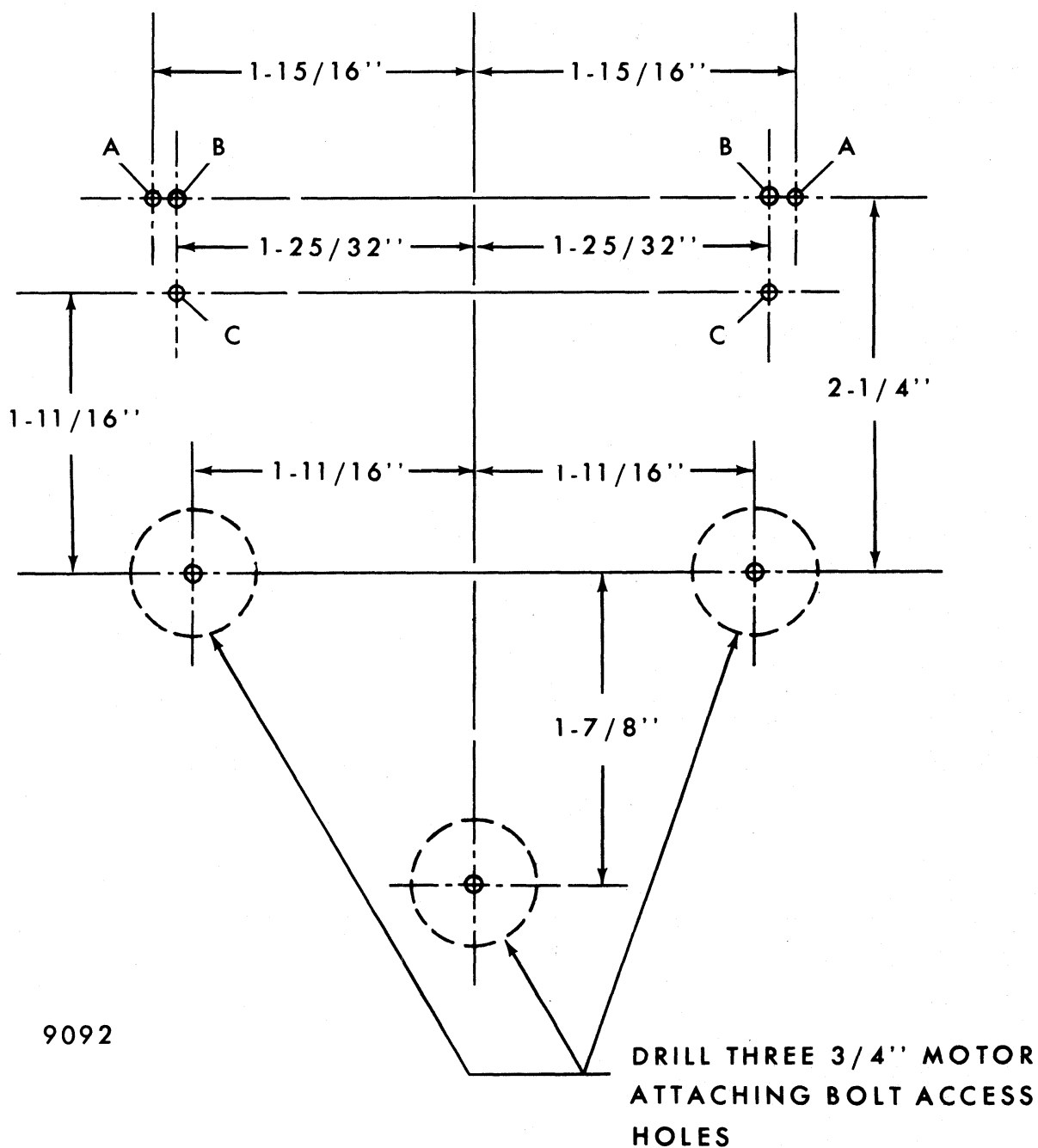


Fig. 5-40-Window Regulator Lower Attaching Rivet Reference Points for Locating Window Motor to Regulator Attaching Bolts

- A. For "B, C and E-37, 47, 57 and 67" Style Front Doors
- B. For "C-69" Style Rear Doors
- C. For "B-35, 39, 45 and 69" and "C-49" Style Front and Rear Doors and "C-69" Front Doors

ALIGN TEMPLATE WITH APPROPRIATE REGULATOR
LOWER ATTACHING RIVETS ON DOOR

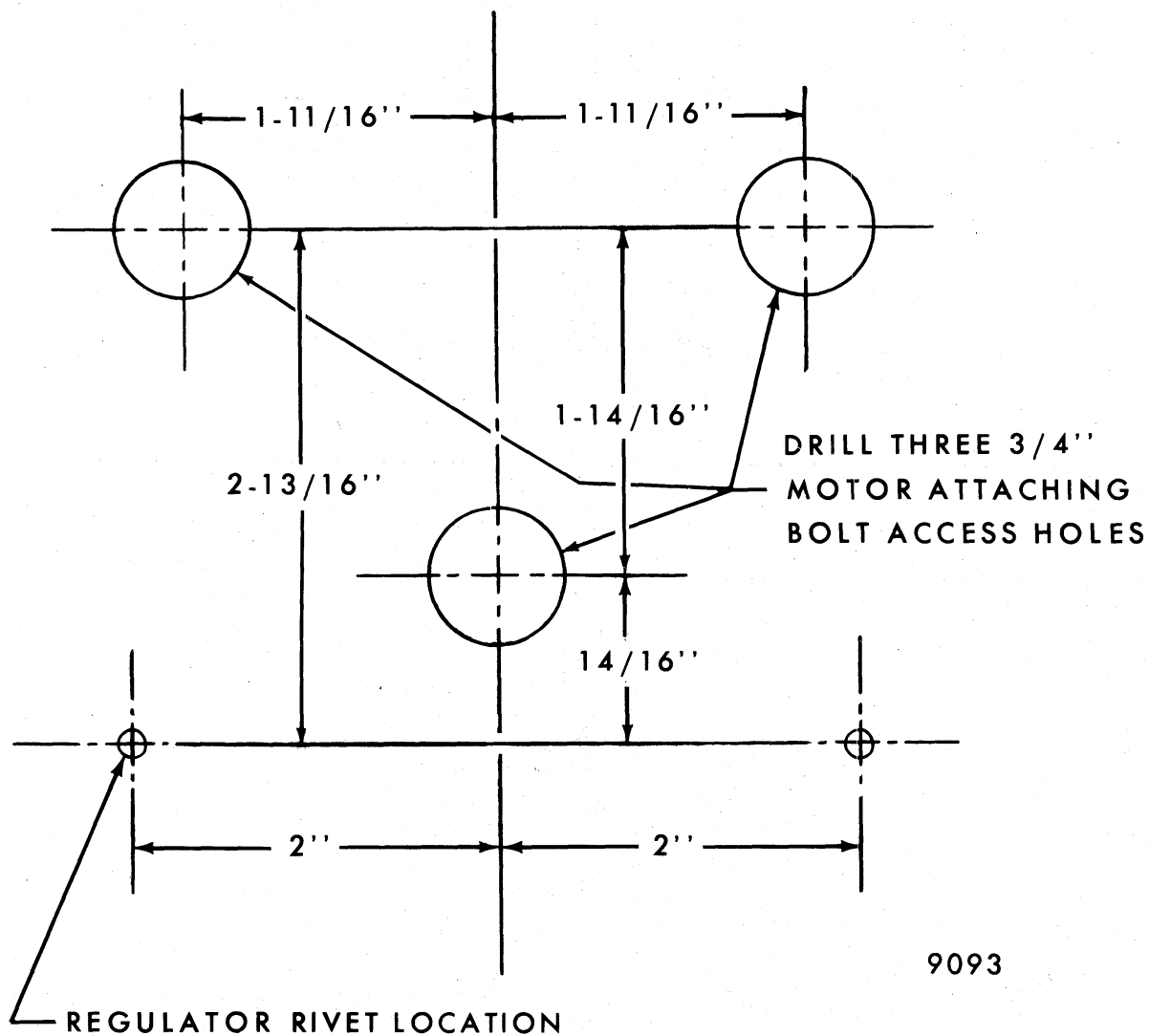
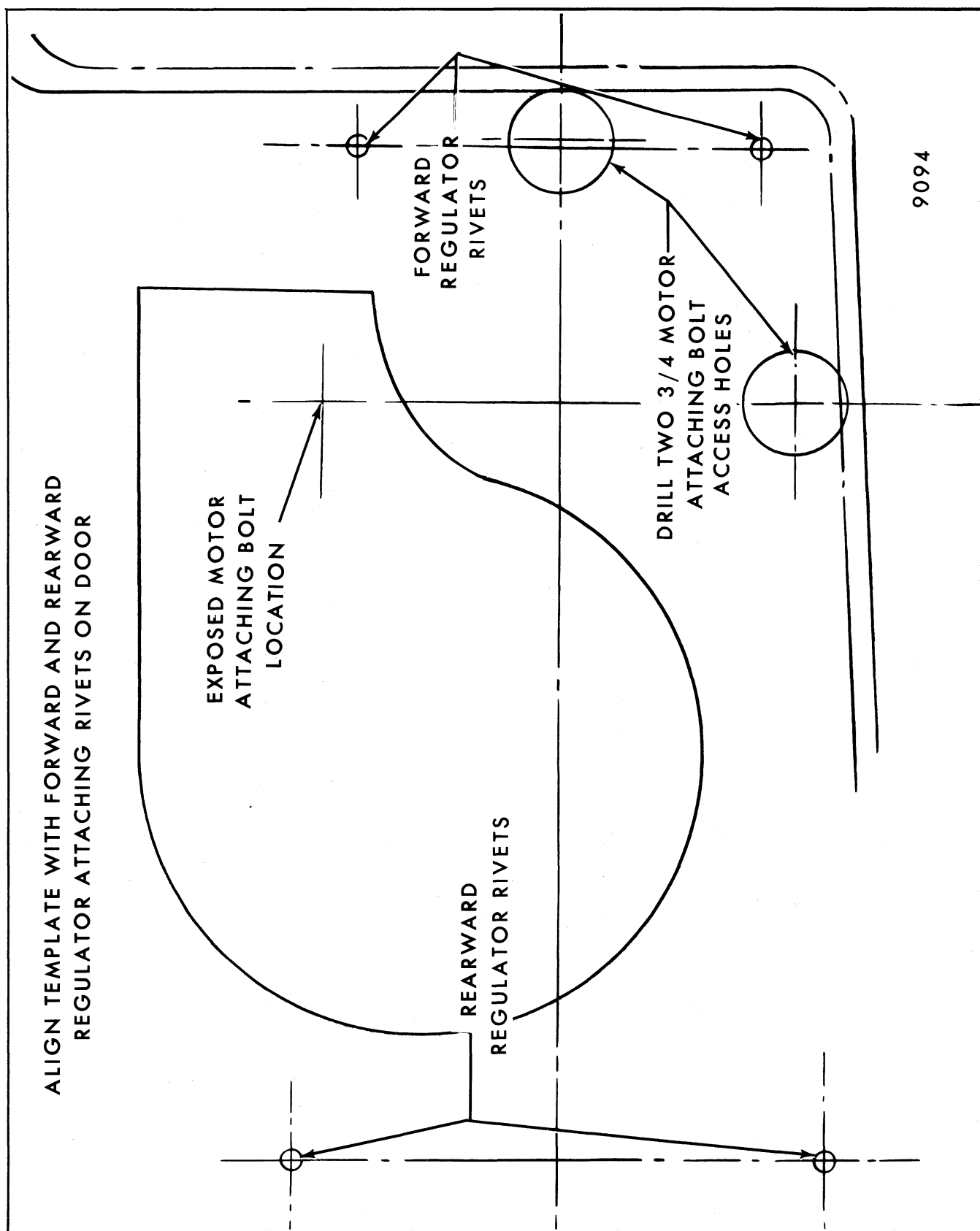


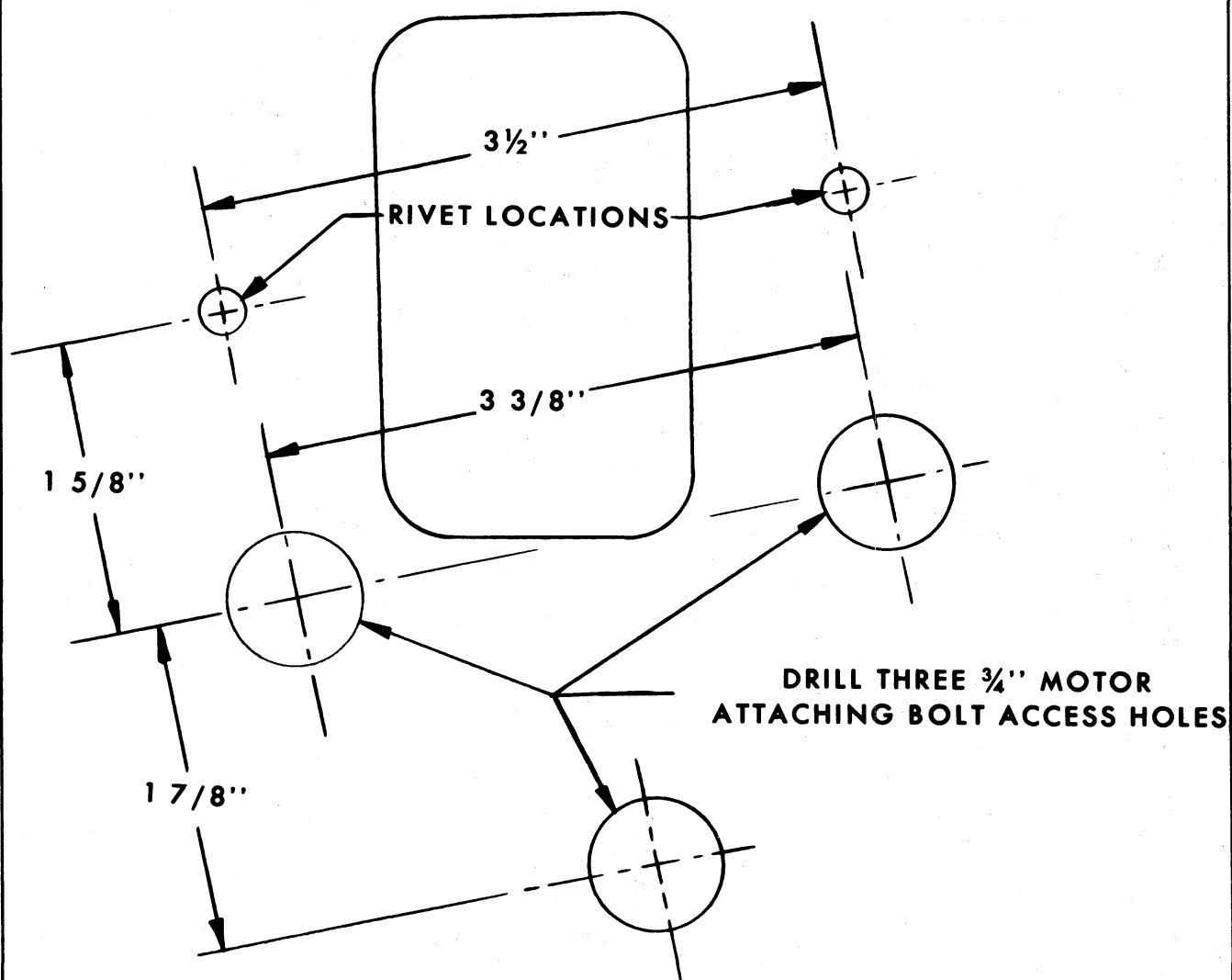
Fig. 5-41-Window Regulator Lower Attaching Rivet Reference Points for Locating Window Motor to Regulator Attaching Bolts
- "F" Styles



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Fig. 5-42-Window Regulator Lower Attaching Rivet Reference Points for Locating Window Motor to Regulator Attaching Bolts
- "A-29,35" Styles, Rear Door

**ALIGN TEMPLATE WITH REGULATOR
LOWER ATTACHING RIVETS ON DOOR**



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Fig. 5-43-Window Regulator Lower Attaching Rivet Reference Points for Locating Window Motor to Regulator Attaching Bolts
- "X-69" Style, Rear Door

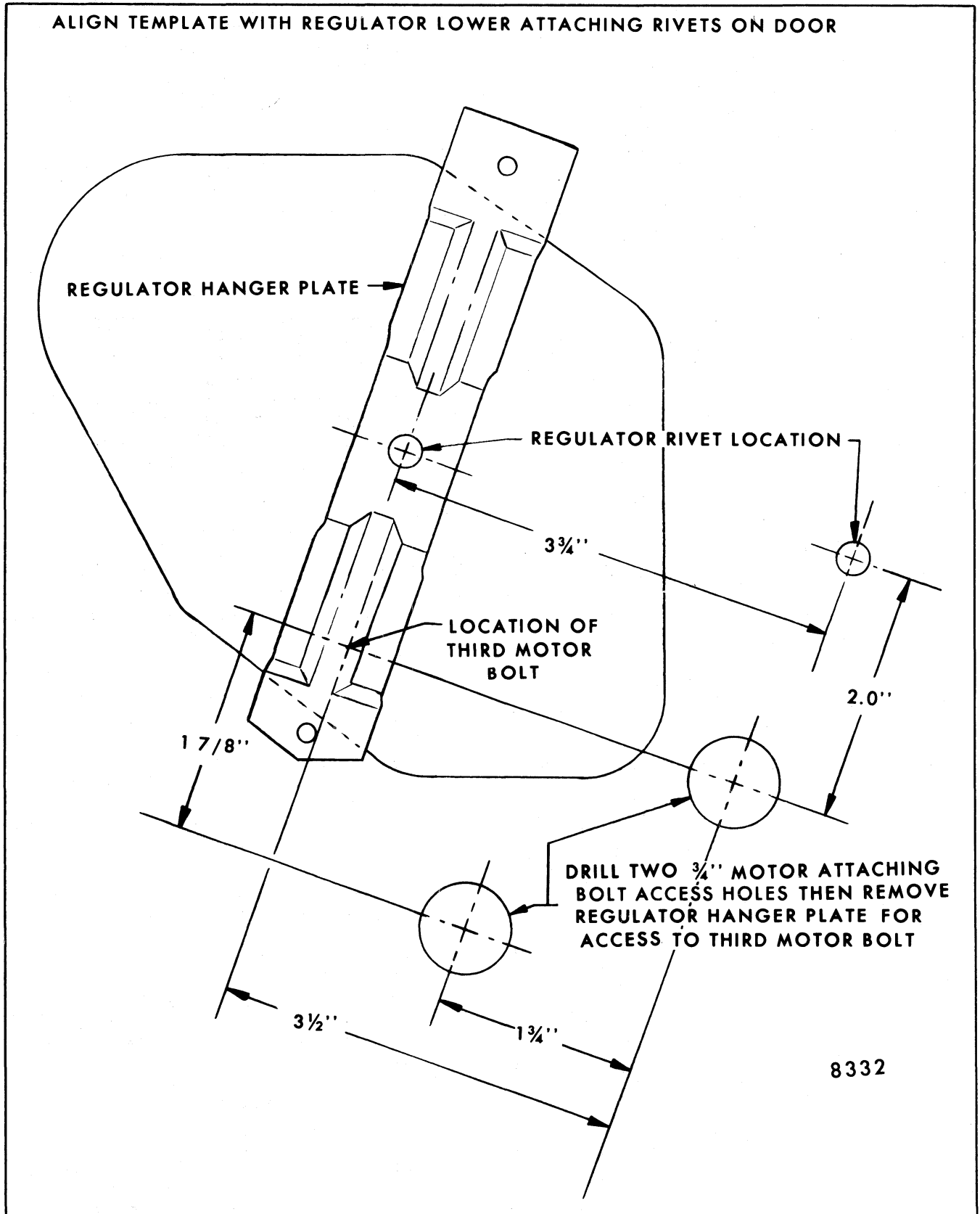


Fig. 5-44-Window Regulator Lower Attaching Rivet Reference Points for Locating Window Motor to Regulator Attaching Bolts
- All "X" Styles, Front Door

using window regulator to door inner panel attaching rivets as reference points.

NOTE: On "A" front door regulators, motor attaching bolts are on outboard side of motor (Fig. 5-45) and template is not required. Use 7/16" wrench to remove motor attaching bolts, then disconnect wire harness and remove motor. Proceed to step 8.

4. Align regulator rivet locations specified on template with appropriate regulator attaching rivets on door. Secure template in place with a piece of tape.
5. Using a center punch, dimple the door inner panel at the center of each of the 3/4" holes to be drilled as indicated on the template.
6. Using a 3/4" hole saw, drill three 3/4" motor to regulator attaching bolt access holes as indicated.
7. Remove motor attaching bolts and remove motor through access hole.

NOTE: Although window regulator lift arm is under tension of counterbalance spring, weight of window assembly prevents lift arm from moving. If necessary, window can be moved manually to clear access holes.

8. Prior to installation, lubricate motor drive gear and regulator sector teeth.
9. Attach motor to regulator making sure drive gear properly engages sector gear teeth before installing motor attaching bolts.

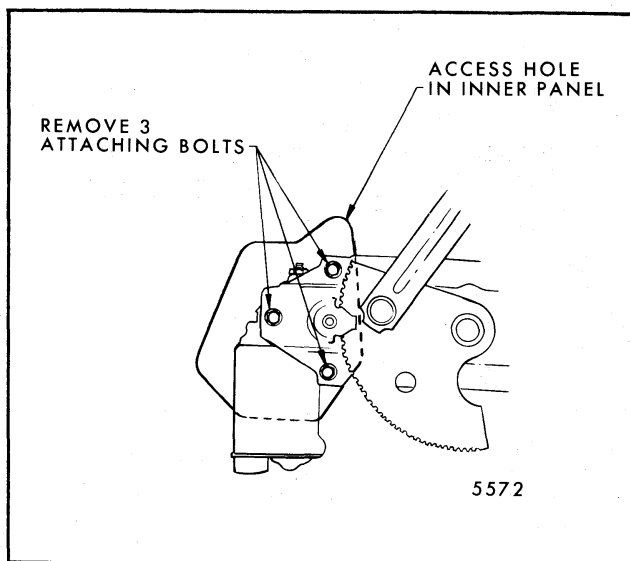


Fig. 5-45-Front Door Electric Window Motor Viewed from Door Outer Panel Side - "A" Styles

10. Use waterproof tape to seal any holes outside water deflector sealing area. Remove tape securing glass in full-up position ("B and X" styles) and reinstall trim.

Removal and Installation - Glass Broken or Not Attached to Regulator

1. Remove window regulator as described in the "Front Door" or "Rear Door" portion of this section.
2. In process of removal, lift regulator to gain access to motor harness, and disconnect harness.

WARNING: STEP 3 MUST BE PERFORMED WHEN REGULATOR IS REMOVED FROM DOOR. THE REGULATOR LIFT ARMS ARE UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE SERIOUS INJURY IF THE MOTOR IS REMOVED WITHOUT LOCKING THE SECTOR GEAR IN POSITION.

3. Drill a 1/8" hole through the regulator sector gear and back plate (Fig. 5-46) DO NOT drill hole closer than 1/2" to edge of sector gear or back plate. Install a pan head sheet metal tapping screw (No. 10-12 x 3/4) in drilled hole to lock sector gear in position.

NOTE: Step 3 is not necessary for "B" and "X" rear door regulators without a counterbalance spring.

4. Remove regulator motor attaching bolts and remove motor assembly from regulator.
5. Prior to installation, lubricate the motor drive gear and regulator sector teeth.

NOTE: The lubricant used must be cold weather approved to a minimum of minus 20 degrees Fahrenheit.

6. Install regulator motor to regulator. Make sure the motor pinion gear teeth mesh properly with the sector gear teeth before installing the three motor attaching bolts. When teeth are properly meshed, drive and tighten motor attaching bolts.
7. Remove screw locking sector gear in a fixed position.
8. Reinstall regulator with "U" nuts (Part No. 3916700 or equivalent) and screws (Part No. 9642853 or equivalent) as described in "Front Door" or "Rear Door" portion of this section. Connect wire harness to motor prior to attaching regulator to inner panel.

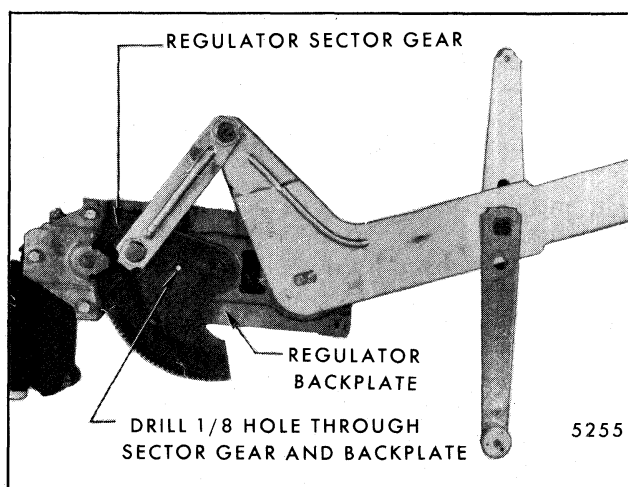


Fig. 5-46-Front Door Window Regulator Motor Removal

LOWER SASH CHANNEL CAM

The door window lower sash channel cam (Fig. 5-47) is bonded to the window with urethane adhesive caulking compound. If glass or sash channel requires

replacement, the following procedure may be used.

Removal and Installation

1. Remove door trim panel assembly, inner panel water deflector and door window as previously described.
2. If channel cam is attached to glass and glass is to be reused, mark location of channel on glass at front and rear with crayon marker or masking tape.
3. Remove channel from glass by applying heat from welding torch with No. 2 or 3 tip along full bottom length of channel. Slowly pass tip back and forth for 60 to 90 seconds minimum, then grip channel with pliers and pull loose. If channel does not easily separate, repeat heating operation.
4. Thoroughly clean replacement glass. If original glass is to be used, scrape all traces of urethane adhesive off with sharp bladed tool. If original

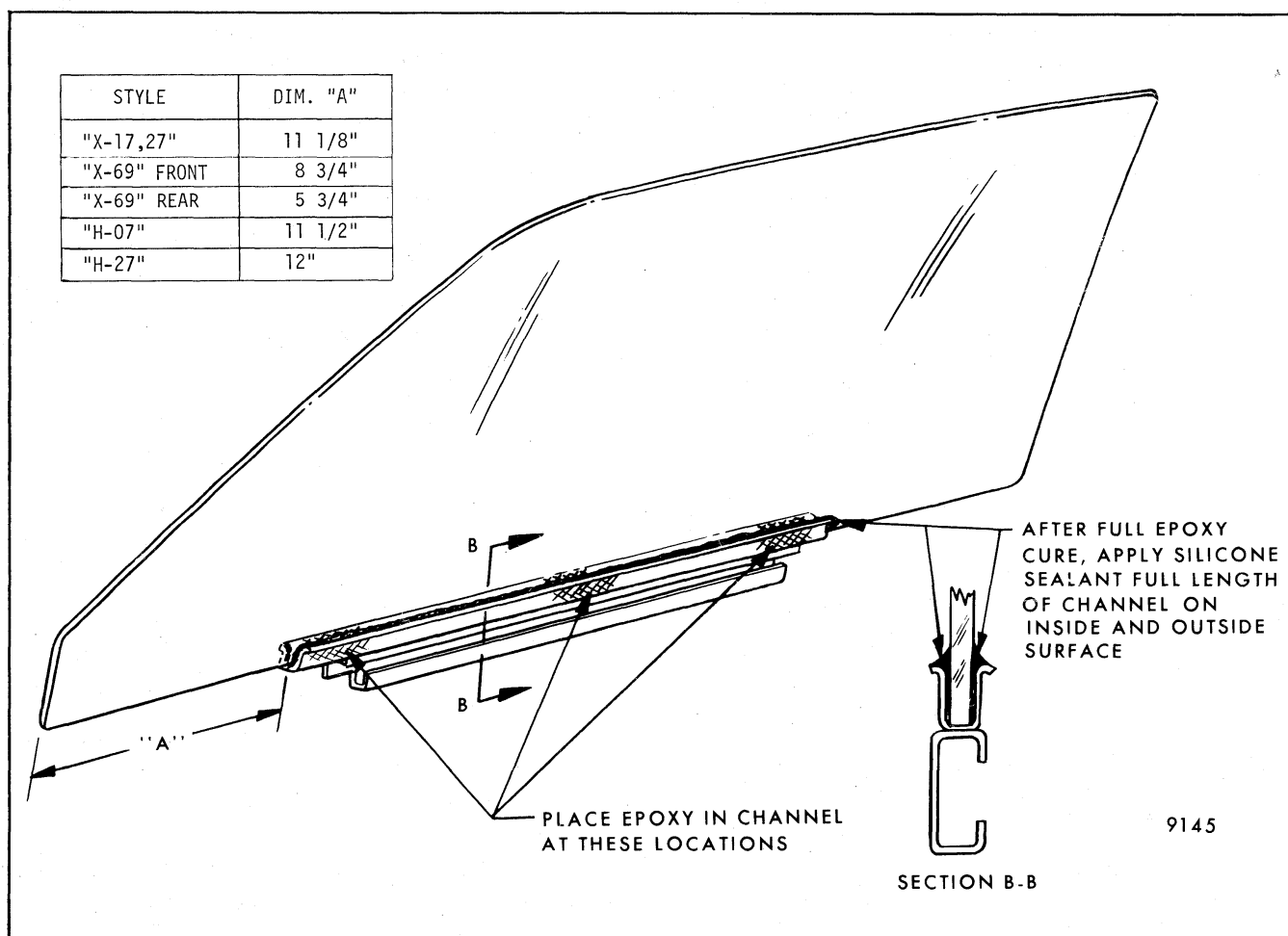


Fig. 5-47-Glass to Sash Channel Bonding

channel is to be reused, clamp in vise and burn-out remaining urethane adhesive with welding torch. While still hot, wire brush urethane traces from channel and remove remaining adhesive from glass and channel with lacquer thinner. Complete cleaning operation with water.

WARNING: DURING THE URETHANE BURN-OUT OPERATION, AVOID DIRECT INHALATION OF THE FUMES BEING EMITTED.

5. If replacement glass is being installed, locate the front of sash channel to lower front edge of glass as shown in Figure 5-47.
6. To bond channel to glass, a two-part adhesive such as 3M Structural Adhesive No. 8101, Loctite "Clear" Epoxy, or Loctite Fast Cure Epoxy 45 or equivalent is required. Thoroughly mix approximately one and one-half tablespoons (two Loctite mixer cups) of adhesive per package instructions. Place adhesive into channel at three locations indicated in Fig. 5-47.
7. Apply channel to glass at previously determined location and immediately tape channel to glass using cloth-backed body tape. Allow adhesive to cure for one hour minimum prior to reinstallation into car.
8. After full adhesive cure, flow a thin bead of silicone adhesive such as Dow Corning RTV 732 Silastic, 3M Super Silicone Part No. 8661 or equivalent the full length of channel surface to prevent water entrapment in channel (Fig. 5-47).

9. Reinstall glass, water deflector, and door trim assembly.

DOOR HARDWARE LUBRICATION

The mechanical components of the door assembly are lubricated during assembly. If additional lubrication is required to any door hardware mechanism, lubricate with Fisk Bros. No. 777 Lo-Temp Lubriplate or equivalent.

HARDWARE ATTACHMENT THREAD LOCKING

All door hardware production attaching screws contain an epoxy thread-locking compound to insure that the minimum original torque setting will be maintained. The screws can be reinstalled or adjusted up to five times before the thread-locking compound becomes ineffective.

Service attaching screws do not contain a thread-locking compound. To prevent loosening of service screws or to renew thread-locking characteristics of production screws, the threads of the fastener(s) can be treated with Loctite 75 (G.M. Part No. 1051343 - Group 8.800) or equivalent.

Loctite 75 is a two-part material applied to the hardware attachment as a liquid. Upon installation and torquing, the adhesive cures to bond the attachment and prevent loosening or "back-out". The adhesive bond does not prevent future attachment removal if required. Loctite 75 or equivalent can be used on any threaded fastener.

FRONT DOORS

INTRODUCTION

All doors fall into two basic categories, closed styles (those with door upper frames) and hardtop or convertible styles (those without door upper frames). Although both types of front doors utilize similar hardware, the presence or lack of a door upper frame usually determines the removal or installation sequence of any particular part.

Any work performed on door hardware usually re-

quires removal of the trim pad and inner panel water deflector. The procedures for water deflectors and trim are covered in the preceding "Front and Rear Doors" and "Door Trim" sections.

Figures 5-48 through 5-67 illustrate front doors for the various body styles with the trim assembly and inner panel water deflector removed. These figures identify the component parts of the front door assembly and various attaching points.

FRONT DOOR HINGES - All Except "H and X" Styles

All hinges are constructed of steel and incorporate a two stage hold-open feature in the upper hinge on "A, B, C, E and F" styles.

The front door is mounted to the front body hinge pillar with an upper and lower hinge. Figure 5-68 illustrates typical front door bolt-on hinge installation.

FRONT DOOR ADJUSTMENT - All Except "H and X" Styles

Door adjustments are provided through use of floating anchor plates in door and front body hinge pillars. When checking door for alignment and prior to making any adjustments, mark location and remove door lock striker from body to allow door to hang freely on its hinges. Loosen front fender where required.

NOTE: When making door adjustments, refer to door lock striker engagement specifications in the "Front and Rear Door" portion of this section.

1. Adjust door up and down and/or fore and aft at body hinge pillar attachments.

NOTE: If REARWARD adjustment of either front door is made, replace the jamb switch. (Refer to Electrical Section of this manual for door jamb switch replacement.)

2. Adjust door in and out at door hinge pillar attachments.
3. For removal or adjustment of all front door hinge to body attaching bolts, use tool J-24353 - 1/2" wrench (or equivalent) as shown in Figure 5-69. After hinge adjustment, torque attaching bolts 17 to 22 foot pounds.

DOOR REMOVAL AND INSTALLATION - All Except "H and X" Styles

Although the door can be removed from the body with or without the hinges attached to the door, it is recommended that when removing the door only, remove the door from the hinges. Accessibility to the door side hinge bolts is better than to the body side bolts.

1. Prior to loosening any hinge bolts, mark position of hinge on door to facilitate adjustment when reinstalling door on hinge.

2. On doors equipped with power operated windows, power door locks, etc., remove trim pad and detach inner panel water deflector sufficiently to disconnect harness assembly(ies) and remove same from door.
3. With aid of a helper, support door in open position and remove upper and lower hinge to door hinge pillar attaching bolts (Fig. 5-68).
4. To install, reverse removal procedure. Adjust door as outlined in previous adjustment procedure. Torque hinge attaching bolts 17 to 22 foot pounds.

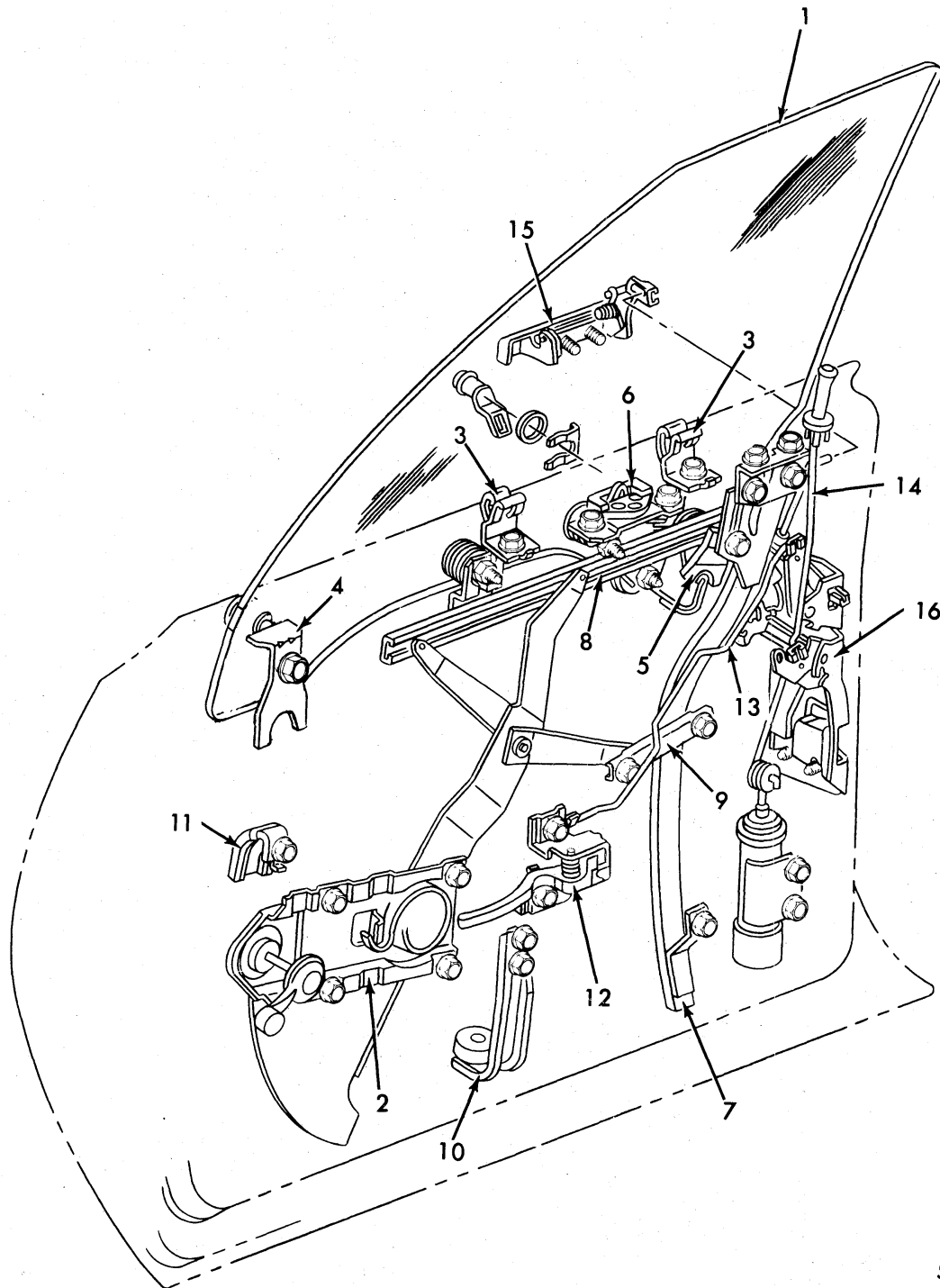
HINGE REMOVAL (Styles not Equipped with Power Options in the Door) - All Except "H" and "X" Styles

1. Remove front door as previously described. Mark position of hinge on body hinge pillar and remove hinge to body hinge pillar attaching bolts.
2. To install hinge, reverse removal procedure. Prior to installation, apply a coat of heavy-bodied sealer to surface of hinge that contacts door and front body hinge pillar for protection against corrosion. Adjust door hinge as previously described.

NOTE: On all styles, removal of upper and lower hinges from body hinge pillar can be accomplished with the door removed without loosening front fender.

HINGE REMOVAL (Styles Equipped with Power Options in the Door) - All Except "H" and "X" Styles

1. Loosen front fender, if necessary, along the lower edge as outlined in Car Division Service Publications.
2. Support door in the full-open position and remove hinge to door and body hinge pillar attaching bolts (Fig. 5-68).
3. Loosen body hinge pillar bolts on remaining hinge, as required. Remove affected hinge from body.
4. To install, reverse removal procedure. Prior to installation of hinge, apply a coat of heavy-bodied sealer to surface of hinge that contacts door and body hinge pillar for protection against corrosion. Align door as previously described.



5539

Fig. 5-48-Front Door Hardware - "A-29, 35" Styles

- | | | | |
|---------------------------|---|---|--|
| 1. Window Assembly | 6. Stabilizer Guide (on Inner Panel) | 9. Inner Panel Cam | 13. Inside Handle to Lock Connecting Rod |
| 2. Window Regulator | 7. Rear Guide and Upper Attaching Bracket | 10. Down-Travel Support | 14. Inside Locking Rod |
| 3. Trim Support Retainers | 8. Lower Sash Channel Cam | 11. Glass Stabilizer Plate (on Inner Panel) | 15. Outside Handle |
| 4. Front Up-Travel Stop | | 12. Inside Remote Handle | 16. Door Lock |
| 5. Rear Up-Travel Stop | | | |

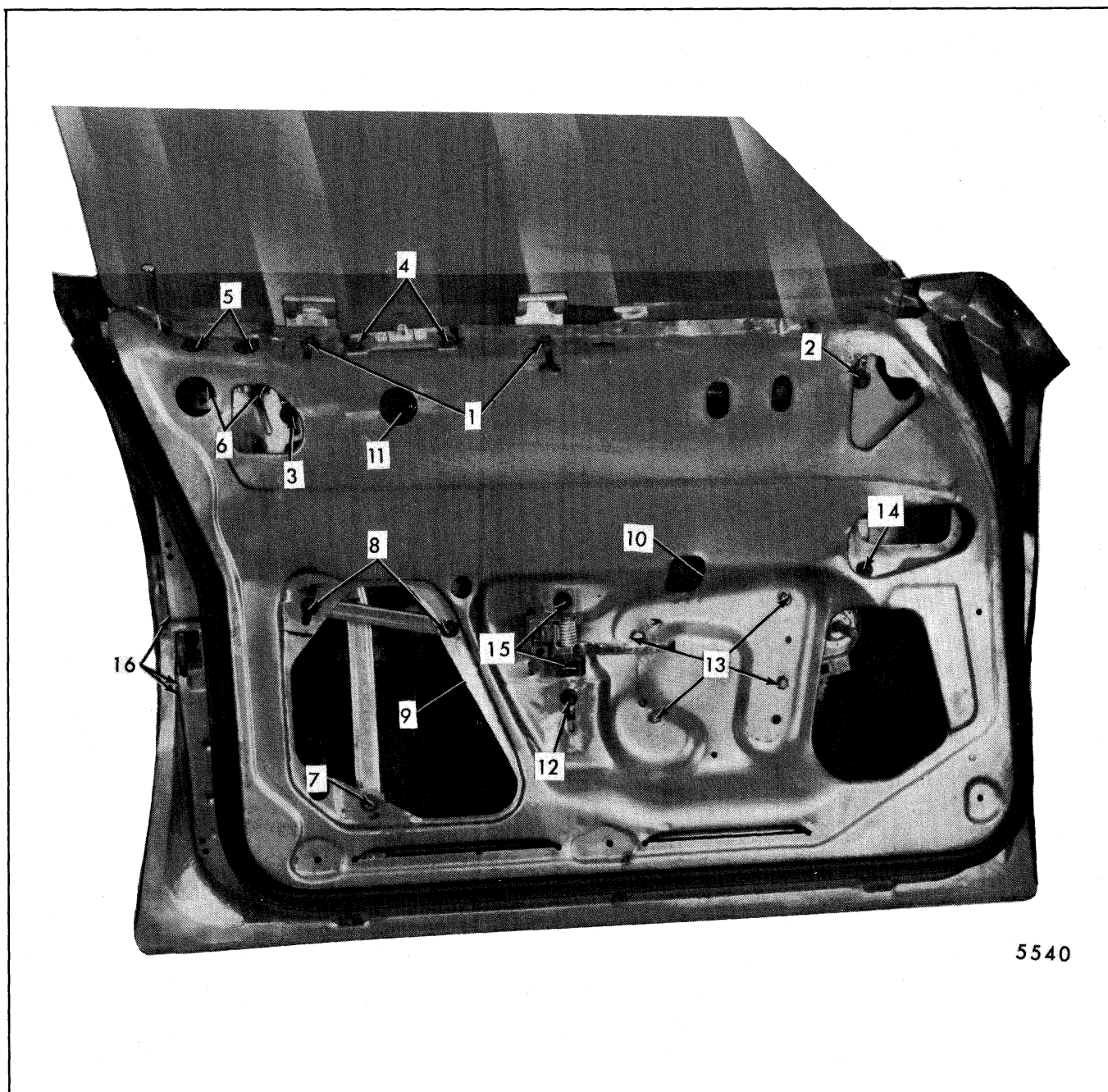


Fig. 5-49 - Front Door Hardware Attachments - "A-29, 35" Styles

- | | | | |
|---|--|--|---|
| 1. Trim Support Retainer Attaching Screws | 5. Rear Guide Upper Bracket Attaching Screws | 9. Lower Sash Channel Cam to Glass Rearward Attaching Nut Access | 12. Down-Travel Support Attaching Screw |
| 2. Front Up-Travel Stop Attaching Screw | 6. Rear Guide Upper Attaching Screws | 10. Lower Sash Channel Cam to Glass Forward Attaching Nut Access | 13. Window Regulator Attaching Rivets |
| 3. Rear Up-Travel Stop Attaching Screw | 7. Rear Guide Lower Attaching Screw | 11. Lower Sash Channel Cam to Glass Center Attaching Nut Access | 14. Glass Stabilizer Plate (on Inner Panel) Attaching Screw |
| 4. Stabilizer Guide (on Inner Panel) Attaching Screws | 8. Inner Panel Cam Attaching Screws | | 15. Inside Remote Handle Attaching Screws |
| | | | 16. Door Lock Attaching Screws |

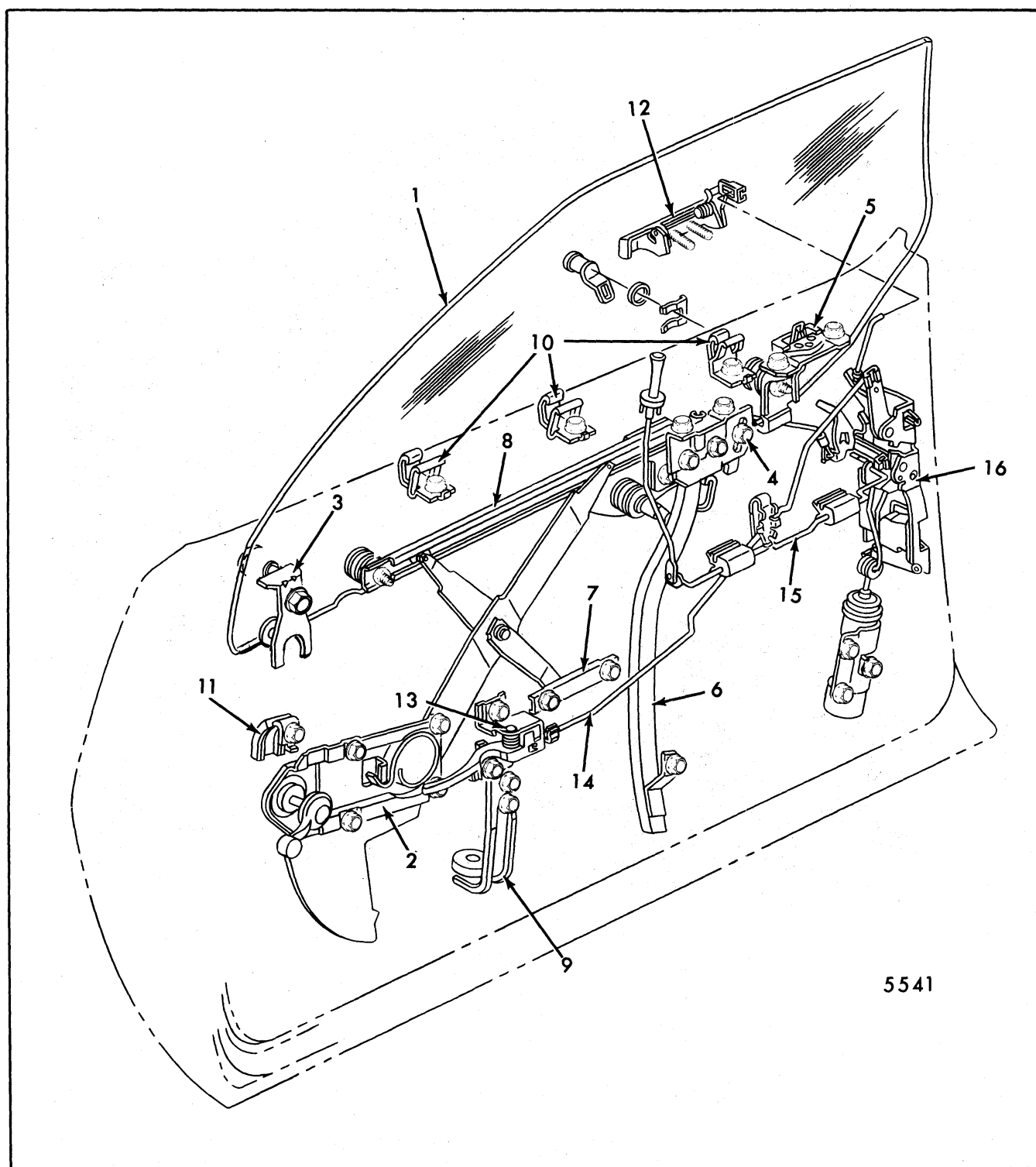
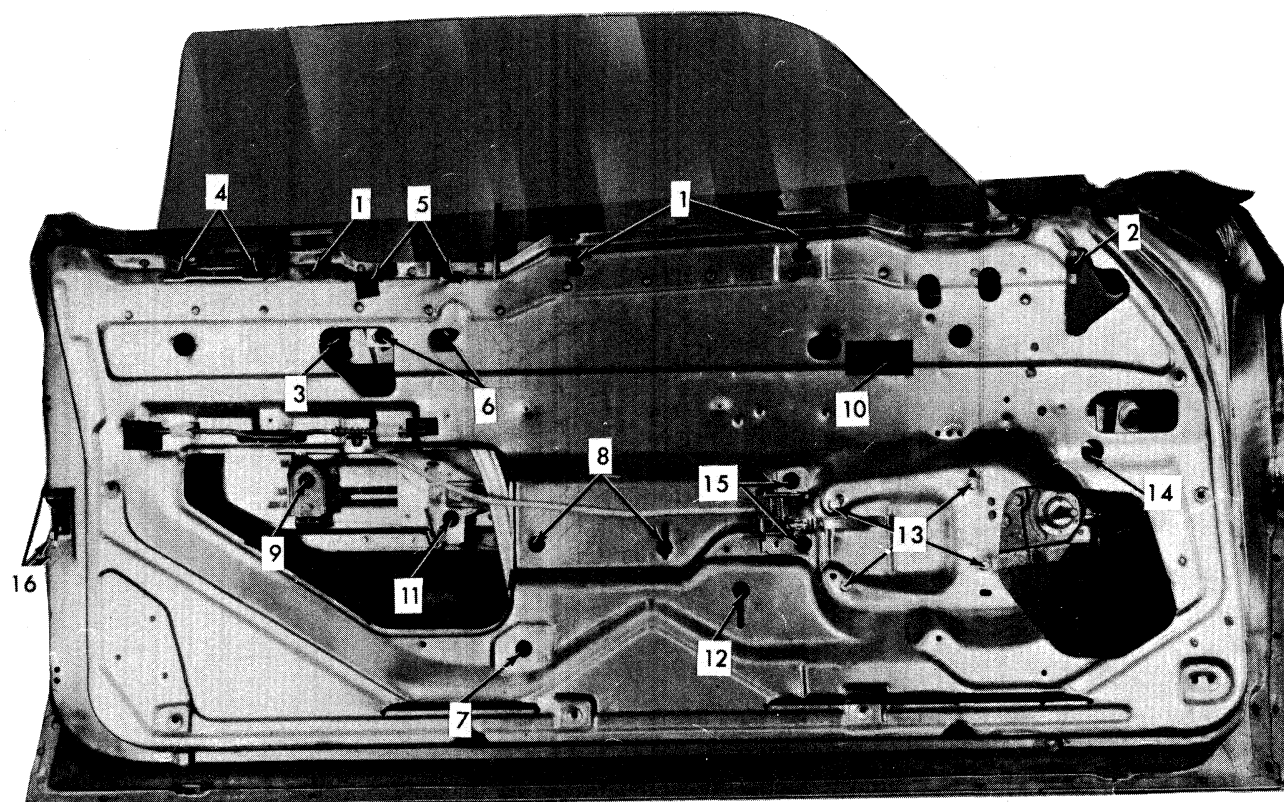


Fig. 5-50-Door Hardware - "A-37, 57, 80" Styles

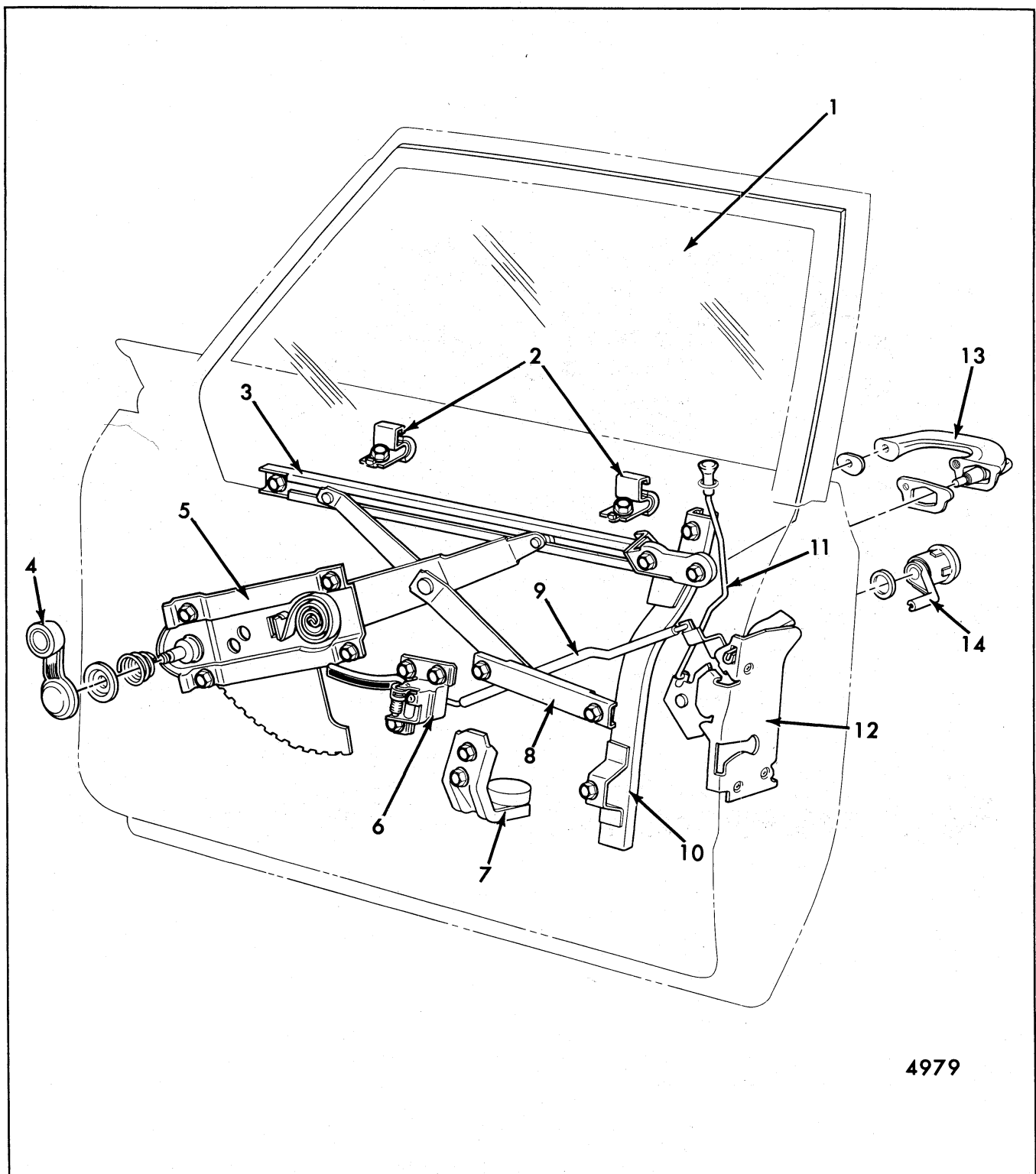
- | | | | |
|-------------------------|--|---|--|
| 1. Window Assembly | 6. Rear Guide and Upper Attaching Bracket Assembly | 9. Down-Travel Support | 13. Inside Remote Handle |
| 2. Window Regulator | 7. Inner Panel Cam | 10. Trim Support Retainers | 14. Inside Handle to Lock Connecting Rod |
| 3. Front Up-Travel Stop | 8. Lower Sash Channel Cam | 11. Glass Stabilizer Plate (on Reinforcement) | 15. Inside Locking Rod |
| 4. Rear Up-Travel Stop | | 12. Outside Handle | 16. Door Lock |
| 5. Stabilizer Guide | | | |



5542

Fig. 5-51-Door Hardware Attachments - "A-37, 57, 80" Styles

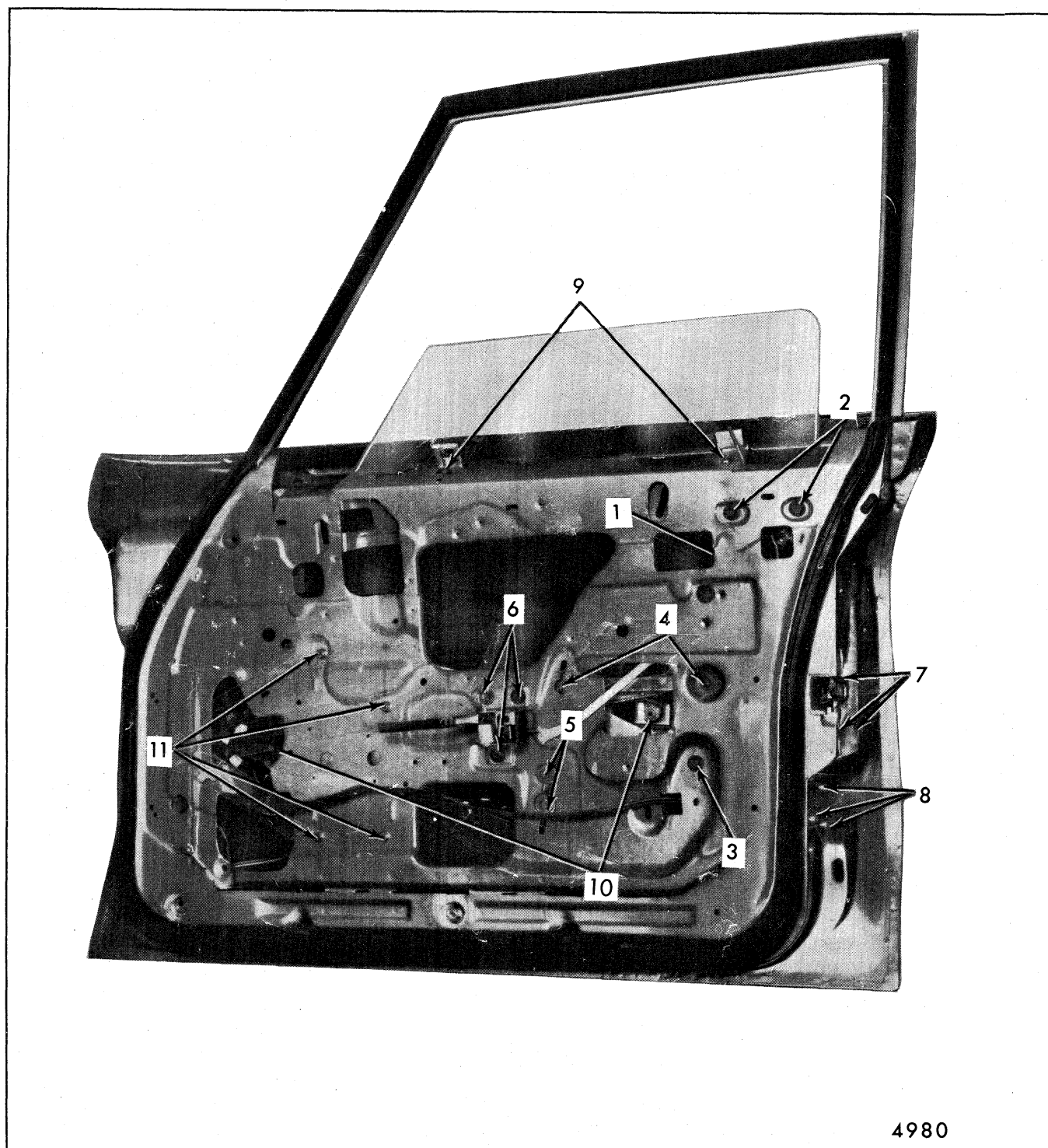
- | | | | |
|---|--|---|--|
| 1. Trim Support Retainer Attaching Screws | 5. Rear Guide Upper Bracket Attaching Screws | 9. Stabilizer to Glass Guide Attaching Nut | 13. Window Regulator Attaching Rivets |
| 2. Front Up-Travel Stop Attaching Screw | 6. Rear Guide Upper Attaching Screws | 10. Lower Sash Channel Cam to Glass Front Attaching Nut | 14. Glass Stabilizer Plate (on Reinforcement) Attaching Screws |
| 3. Rear Up-Travel Stop Attaching Screw | 7. Rear Guide Lower Attaching Screw | 11. Lower Sash Channel Cam to Glass Rear Attaching Nut | 15. Inside Remote Handle Attaching Screws |
| 4. Stabilizer Guide Attaching Screws | 8. Inner Panel Cam Attaching Screws | 12. Down-Travel Support Attaching Screw | 16. Door Lock Attaching Screws |



4979

Fig. 5-52-Front Door Hardware - "B-35, 45, 69" styles

- | | | | |
|---------------------------|----------------------------|---|------------------------|
| 1. Window Assembly | 4. Window Regulator | 8. Inner Panel Cam | 11. Inside Locking Rod |
| 2. Trim Support Retainers | 5. Window Regulator Handle | 9. Inside Handle to Lock Connecting Rod | 12. Door Lock |
| 3. Lower Sash Channel Cam | 6. Inside Remote Handle | 10. Rear Guide | 13. Outside Handle |
| | 7. Down-Travel Support | | 14. Lock Cylinder |



4980

Fig. 5-53-Front Door Hardware Attachments - "B-35, 45, 69" styles

- | | | | |
|---|---|---|--|
| 1. Rear Guide to Guide Bracket Attaching Screws | 3. Rear Guide Lower Attaching Screw | 6. Inside Remote Handle Attaching Screws | 9. Belt Trim Support Retainer Attaching Screws |
| 2. Rear Guide Bracket to Inner Panel Attaching Screws | 4. Inner Panel Cam Attaching Screws | 7. Door Lock Attaching Screws | 10. Lower Sash Channel Cam Stud Nut Access Holes |
| | 5. Down-Travel Support Attaching Screws | 8. Door Lock Electric Solenoid Attaching Screws | 11. Window Regulator Attaching Rivets |

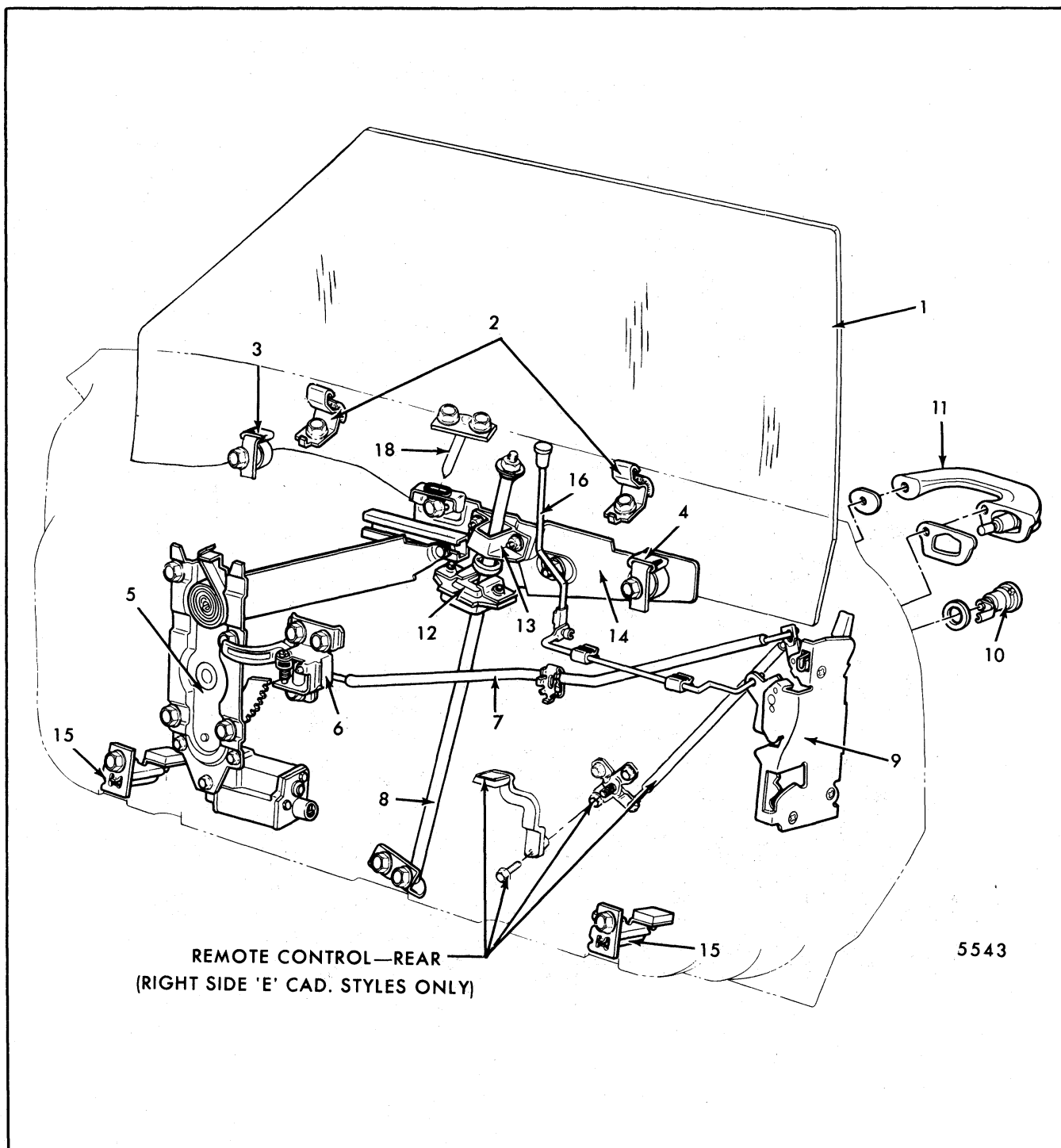


Fig. 5-54-Door Hardware - "B, C and E" Two-Door Styles

- | | | | |
|---------------------------|---|----------------------------|----------------------------|
| 1. Window Assembly | 7. Inside Handle to Lock Connecting Rod | 11. Outside Handle | 14. Lower Sash Guide Plate |
| 2. Trim Support Retainers | 8. Window Guide Tube | 12. Lower Sash Lower Guide | 15. Down-Travel Support |
| 3. Front Up-Travel Stop | 9. Door Lock | 13. Lower Sash Upper Guide | 16. Inside Locking Rod |
| 4. Rear Up-Travel Stop | 10. Lock Cylinder | | 18. Guide Pin Stabilizer |
| 5. Window Regulator | | | |
| 6. Inside Remote Handle | | | |

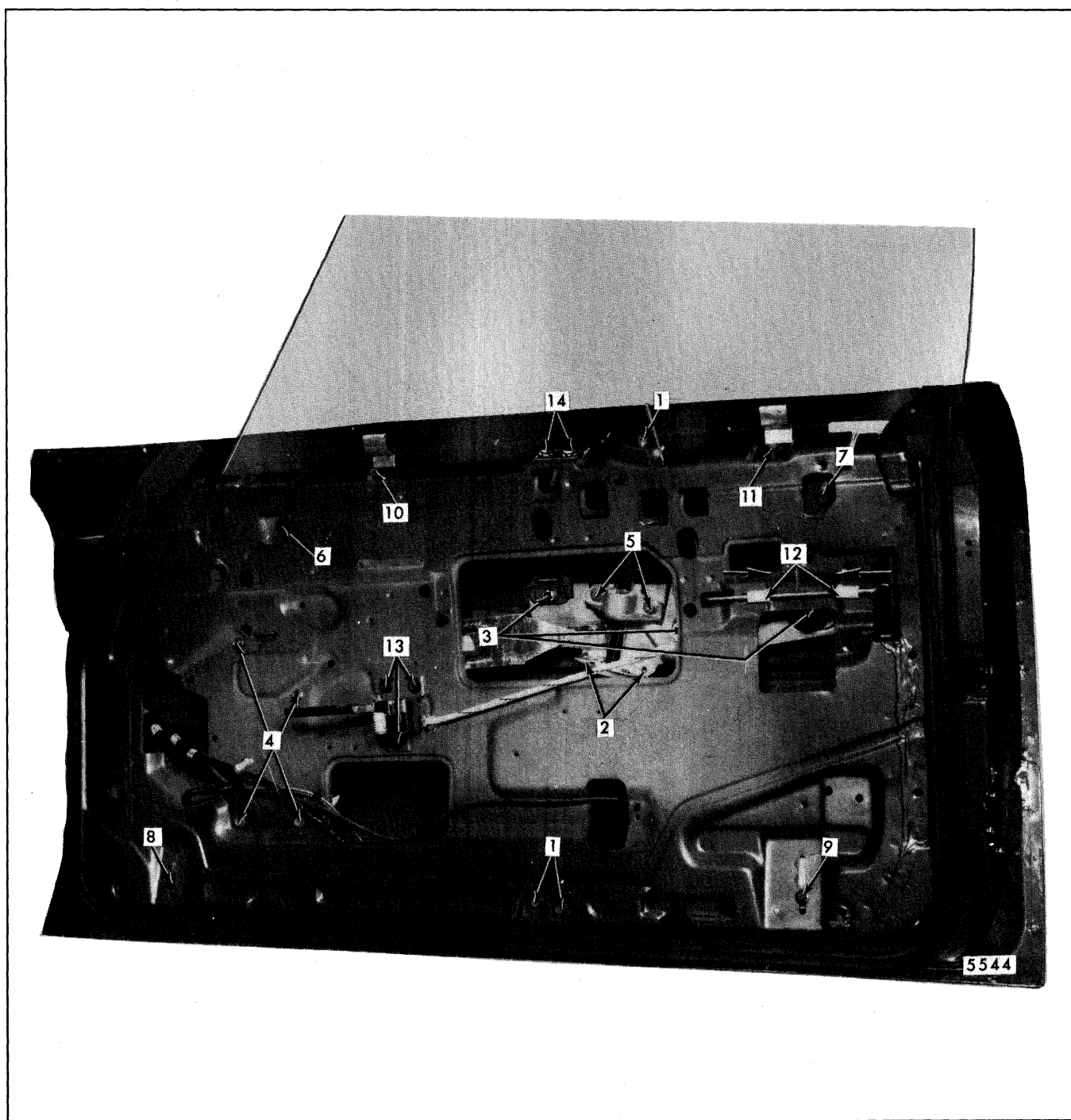


Fig. 5-55-Door Hardware Attachments - "B, C and E" Two-Door Styles

- | | | | |
|--|--|---|--|
| 1. Window Guide Tube Attaching Screws and Nut | 4. Window Regulator Attaching Rivets | 8. Front Down-Travel Support Attaching Screw | 11. Rear Trim Support Retainer Attaching Screw |
| 2. Lower Sash Lower Guide Attaching Screws | 5. Lower Sash Upper Guide Attaching Nuts | 9. Rear Down-Travel Support Attaching Screw | 12. Inside Locking Rod Retainers |
| 3. Plate Assembly, Lower Sash Guide Plate Attaching Nuts | 6. Front Up-Travel Stop Attaching Screw | 10. Front Trim Support Retainer Attaching Screw | 13. Inside Remote Handle Attaching Screws |
| | 7. Rear Up-Travel Stop Attaching Screw | | 14. Guide Pin Stabilizer Attaching Screws |

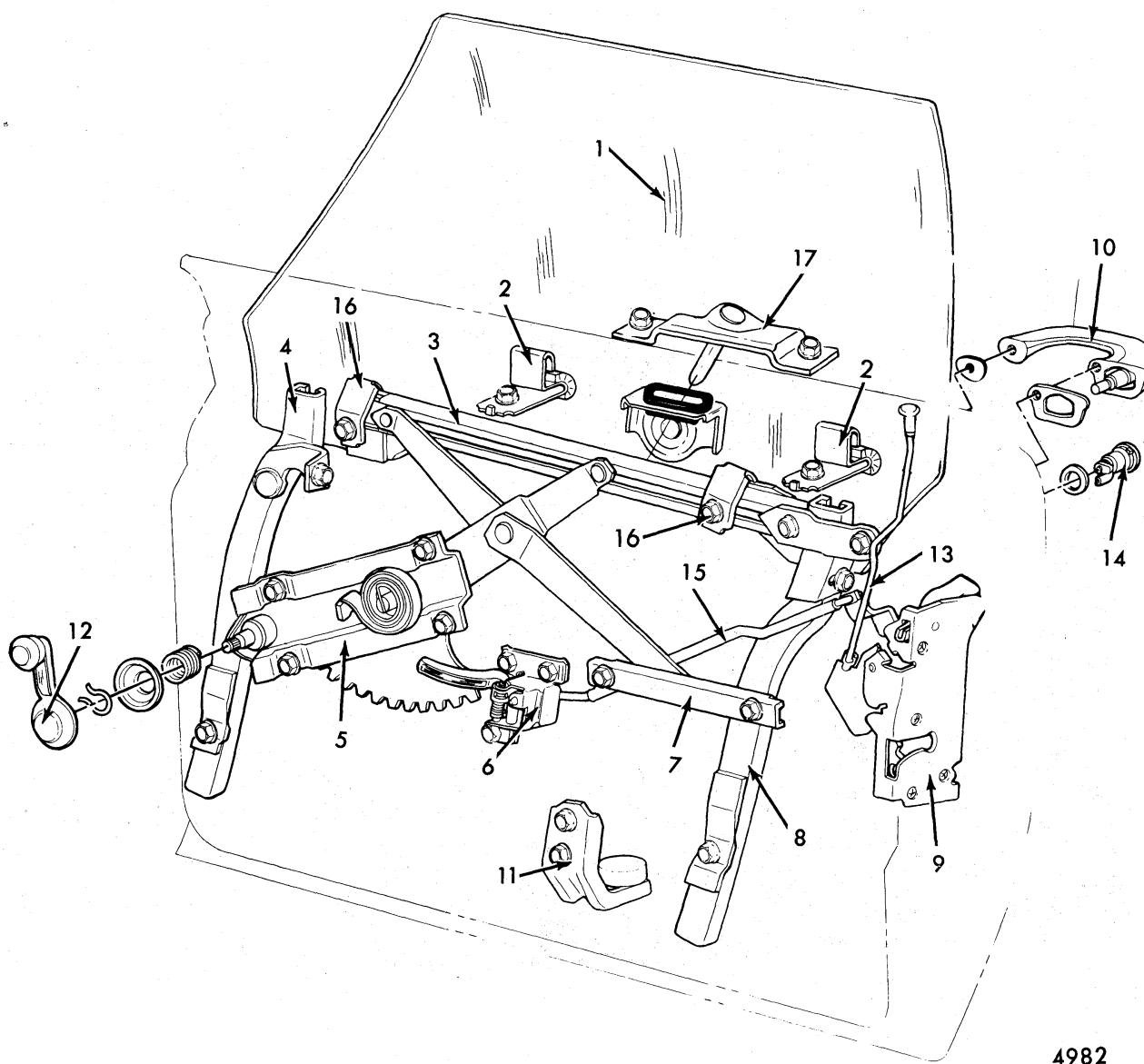
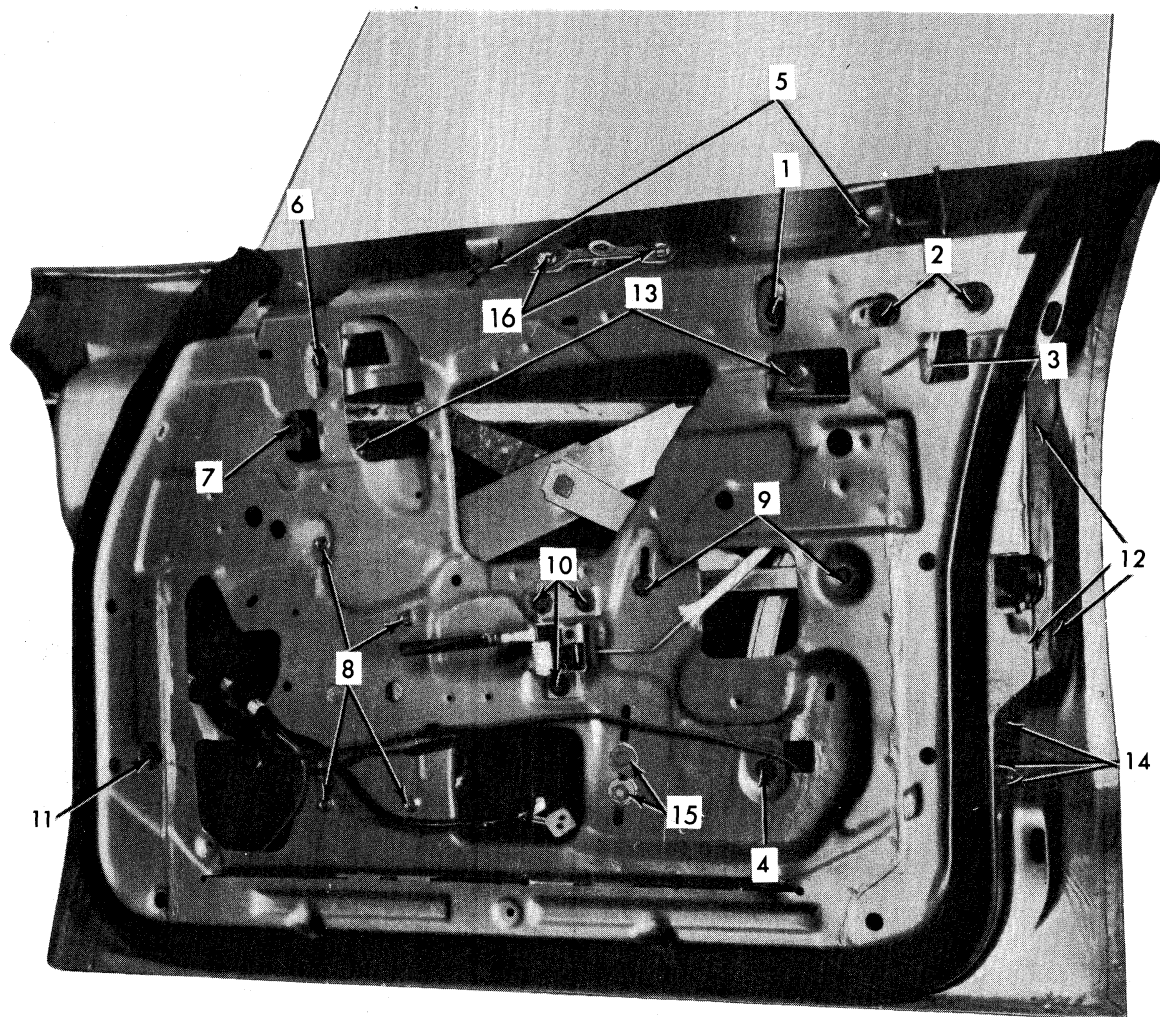


Fig. 5-56-Front Door Hardware - "B and C-39 and 49" Styles and "C-69" Styles

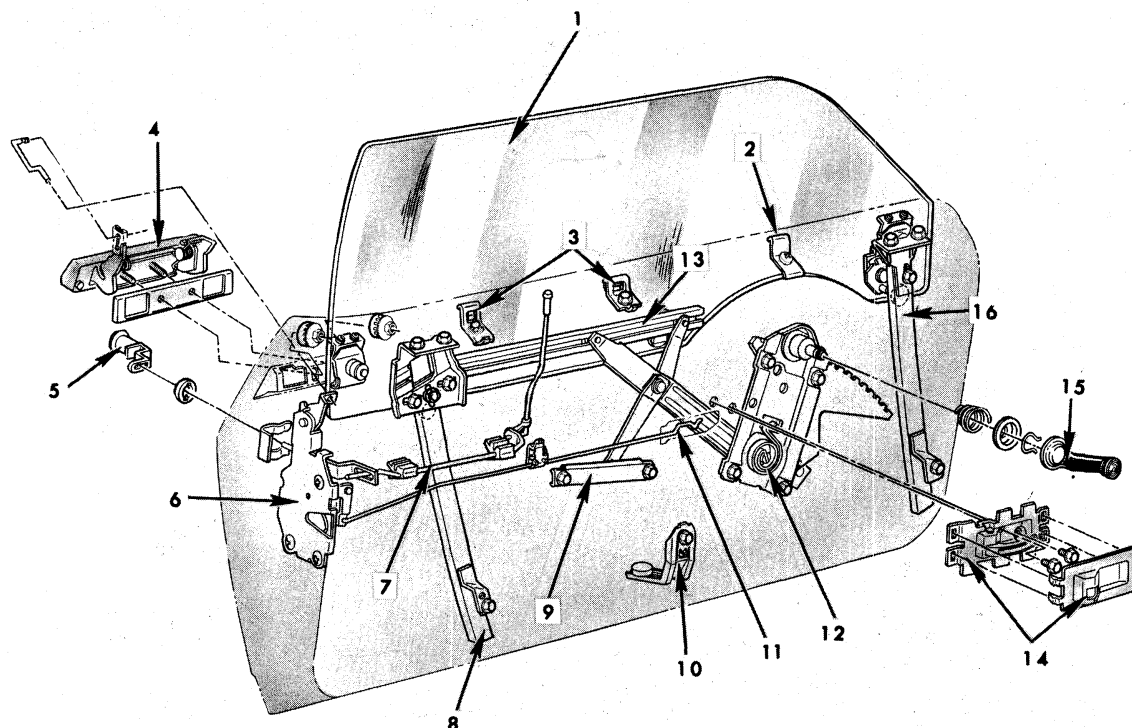
- | | | | |
|---------------------------|-------------------------|--------------------------------|--|
| 1. Window Assembly | 4. Front Guide | 10. Outside Handle | 14. Lock Cylinder |
| 2. Trim Support Retainers | 5. Window Regulator | 11. Window Down-Travel Support | 15. Inside Handle to Lock Connecting Rod |
| 3. Lower Sash Channel Cam | 6. Inside Remote Handle | 12. Window Regulator Handle | 16. Window Up-Travel Stops |
| | 7. Inner Panel Cam | 13. Inside Locking Rod | 17. Guide Pin Stabilizer |
| | 8. Rear Guide | | |
| | 9. Door Lock | | |



4983

Fig. 5-57-Front Door Hardware Attachments - "B and C-39 and 49" Styles and "C-69" Styles

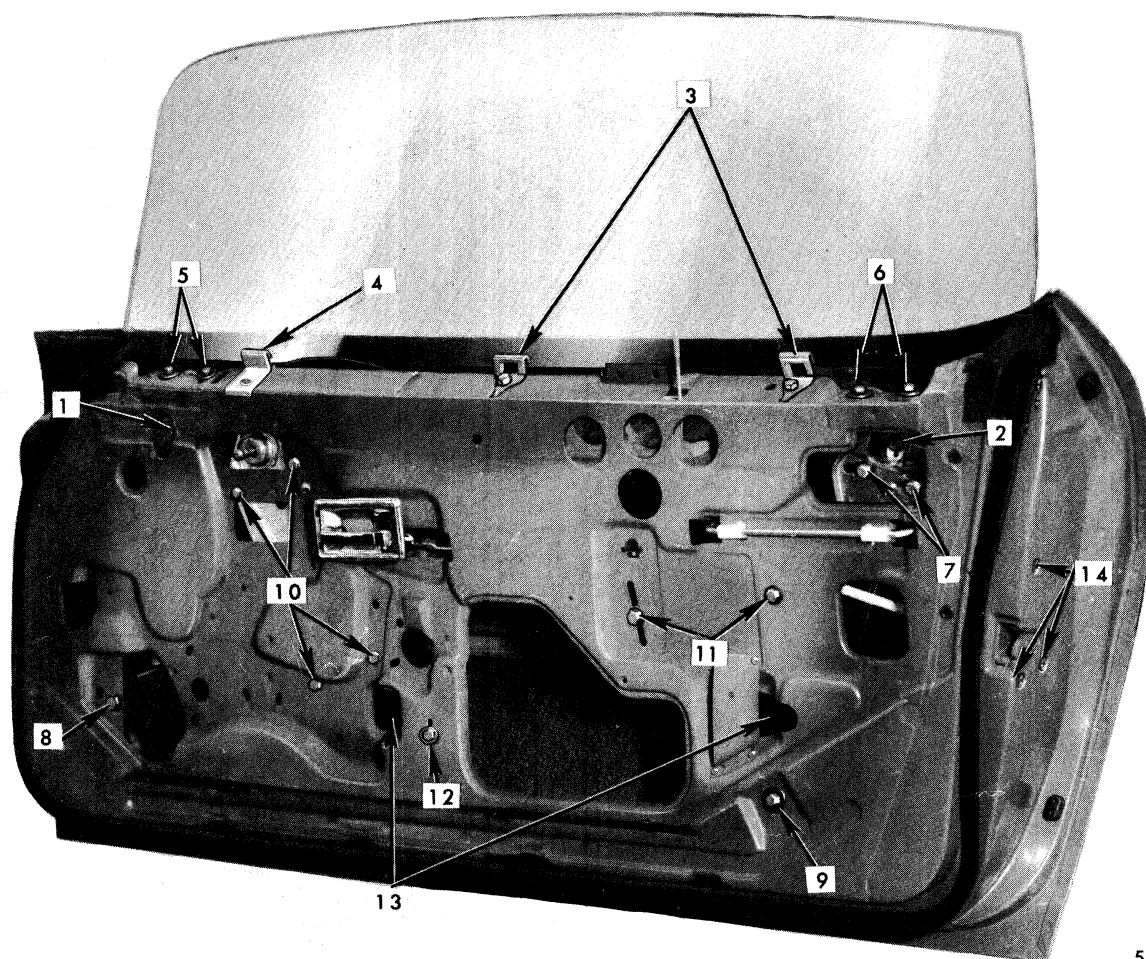
- | | | | |
|--|---|---|--|
| 1. Rear Up-Travel Stop Attaching Screw | 5. Trim Support Retainer Attaching Screws | 9. Inner Panel Cam Attaching Screw | 13. Lower Sash Channel Cam Stud Nut Access Holes |
| 2. Rear Guide Upper Bracket Attaching Screws | 6. Front Up-Travel Stop Attaching Screw | 10. Inside Remote Handle Attaching Screws | 14. Lock Solenoid Attaching Screws |
| 3. Rear Guide to Upper Bracket Attaching Screw | 7. Front Guide Upper Attaching Screw | 11. Front Guide Lower Attaching Screw | 15. Down-Travel Support Attaching Screws |
| 4. Rear Guide Lower Attaching Screw | 8. Window Regulator Attaching Rivets | 12. Door Lock Attaching Screws | 16. Guide Pin Stabilizer Attaching Screws |



5052

Fig. 5-58-Door Hardware - "F" Styles

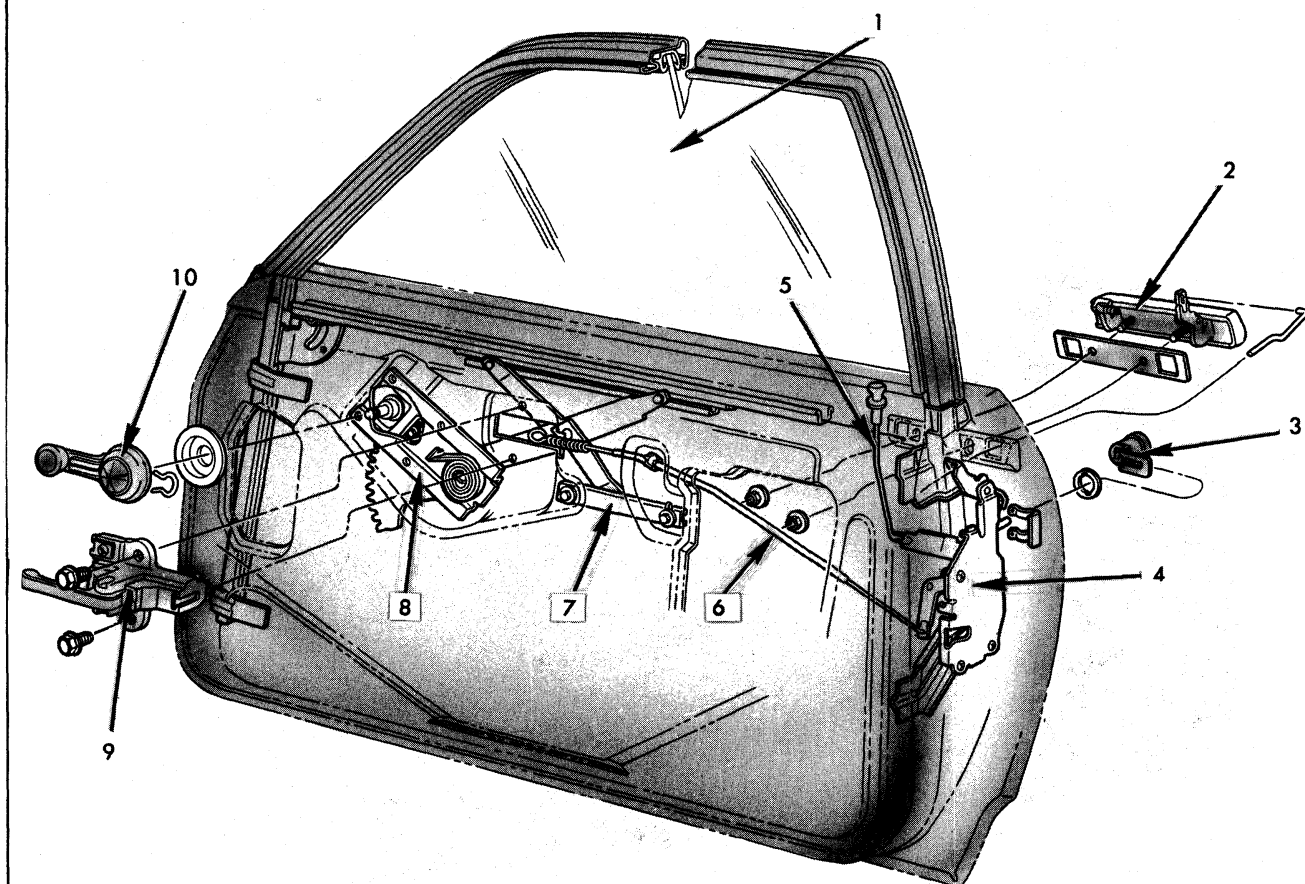
- | | | | |
|---------------------------|-------------------------|--|---|
| 1. Window Assembly | 6. Door Lock Assembly | 11. Inside Handle to Lock Connecting Rod | 14. Inside Remote Handle and Escutcheon |
| 2. Trim Pad Retainer | 7. Inside Locking Rod | 12. Window Regulator | 15. Window Regulator Handle |
| 3. Trim Support Retainers | 8. Rear Guide | 13. Lower Sash Channel Cam | 16. Front Guide |
| 4. Outside Handle | 9. Inner Panel Cam | | |
| 5. Lock Cylinder | 10. Down-Travel Support | | |



5051

Fig. 5-59-Door Hardware Attachments - "F" Styles

- | | | | |
|---|--|---------------------------------------|---|
| 1. Front Up-Travel Stop Attaching Screw | 5. Front Guide Upper Attaching Screws | 8. Front Guide Lower Attaching Screw | 12. Down-Travel Support Attaching Screw |
| 2. Rear Up-Travel Stop Attaching Screw | 6. Rear Guide Upper Bracket Attaching Screws | 9. Rear Guide Lower Attaching Screw | 13. Lower Sash Channel Cam Nut Access Holes |
| 3. Trim Support Retainer Attaching Screws | 7. Rear Guide Upper Attaching Screws | 10. Window Regulator Attaching Rivets | 14. Door Lock Attaching Screws |
| 4. Trim Retainer Attaching Screws | | 11. Inner Panel Cam Attaching Screws | |



4079

Fig. 5-60-Door Hardware - All "H" Styles Except "H-07 and 27" Styles

- | | | | |
|--------------------|-----------------------|--------------------------|-------------------------|
| 1. Window Assembly | 3. Lock Cylinder | 6. Inside Handle to Lock | 8. Window Regulator |
| 2. Outside Handle | 4. Lock Assembly | Connecting Rod | 9. Inside Remote Handle |
| | 5. Inside Locking Rod | 7. Inner Panel Cam | 10. Window Regulator |
| | | | Handle |

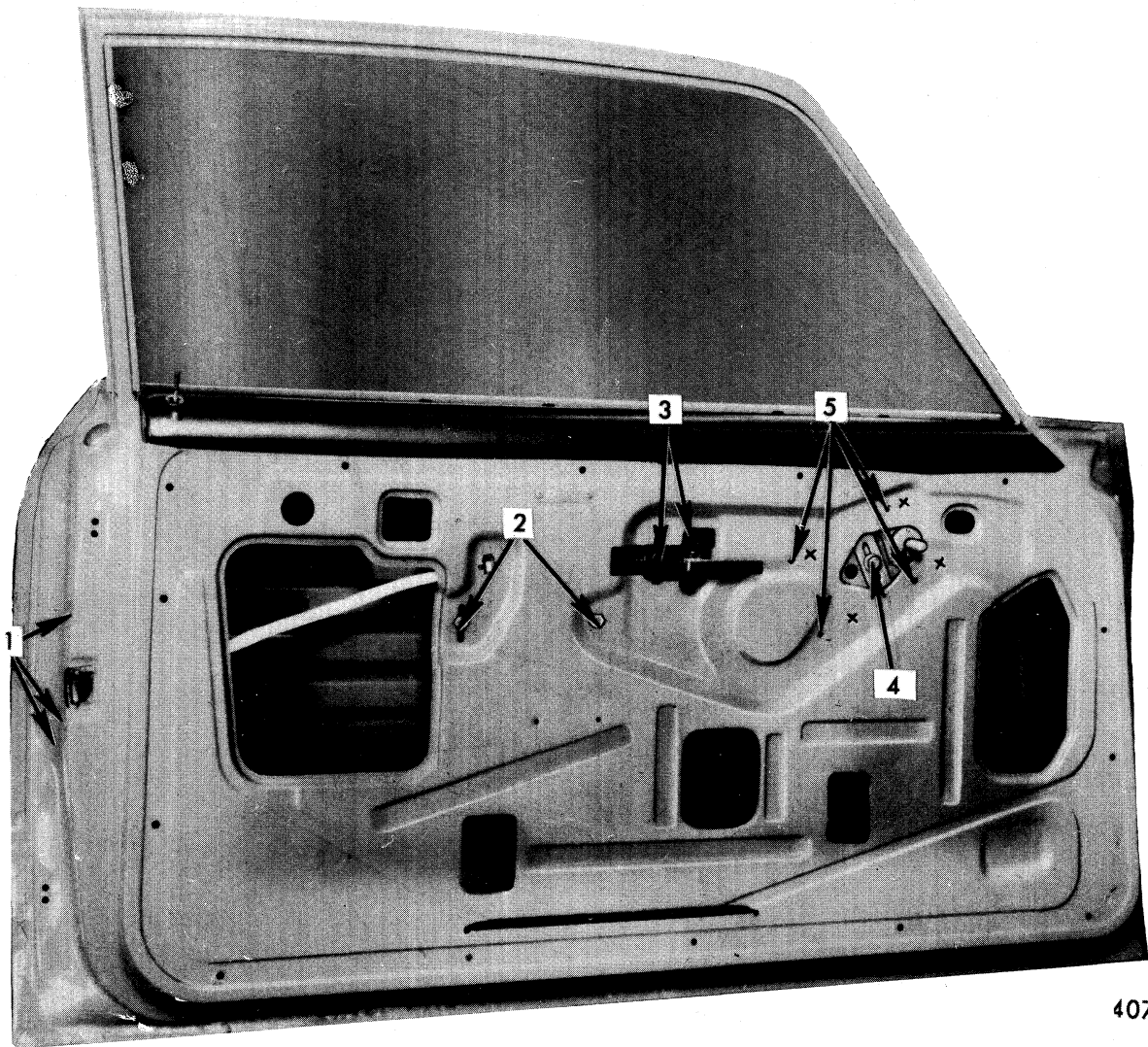
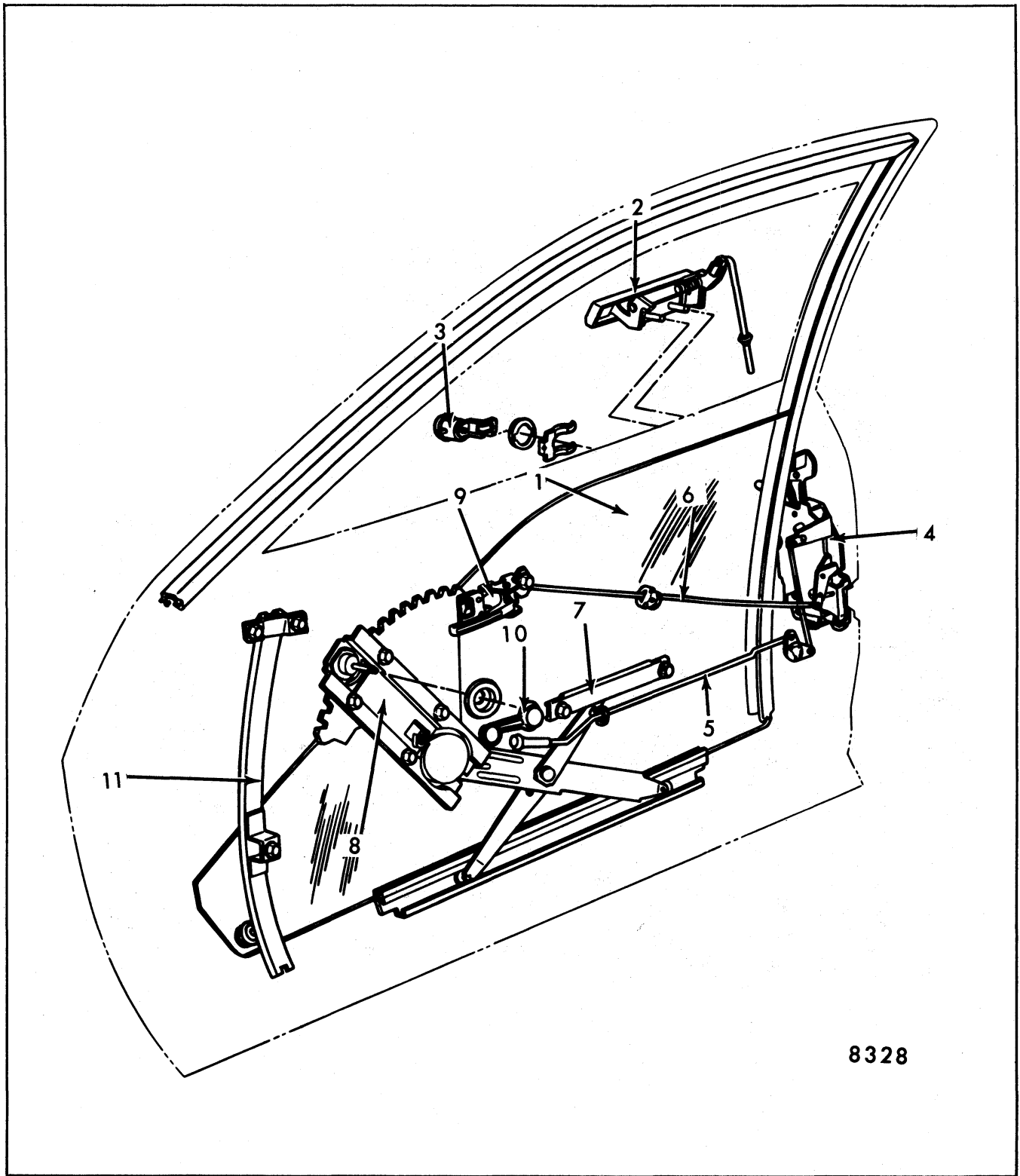


Fig. 5-61-Door Hardware Attachments - All "H" Styles Except "H-07 and 27" Styles

- | | | | |
|-------------------------------------|--|--|---|
| 1. Door Lock Attaching Screws | 3. Inside Remote Handle Attaching Screws | 4. Window Regulator Down-Travel Stop Screw | 5. Replacement Window Regulator Attaching Holes |
| 2. Inner Panel Cam Attaching Screws | | | |



8328

Fig. 5-62-Door Hardware - "H-07" Styles

- | | | | |
|--------------------|---|-------------------------|--------------------------------|
| 1. Window Assembly | 4. Door Lock | 7. Inner Panel Cam | 10. Window Regulator Handle |
| 2. Outside Handle | 5. Inside Locking Rod | 8. Window Regulator | 11. Glass Run Channel Retainer |
| 3. Lock Cylinder | 6. Inside Handle to Lock Connecting Rod | 9. Inside Remote Handle | |

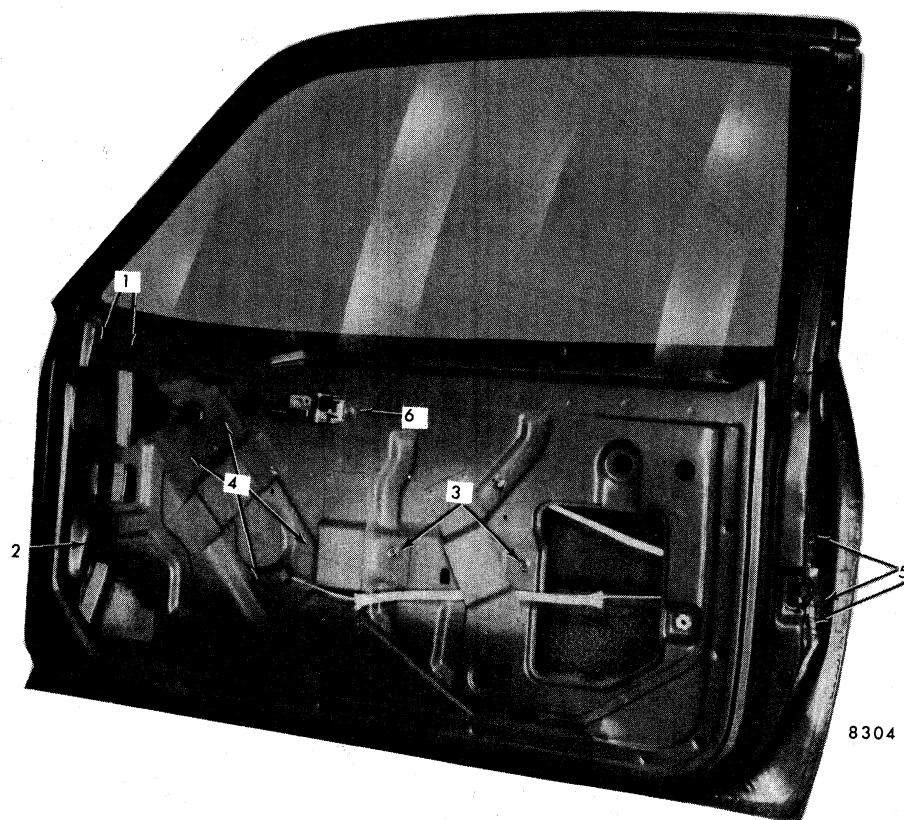


Fig. 5-63-Door Hardware Attachments - "H-07" Styles

- | | | | |
|---|---|---|--|
| 1. Glass Run Channel
Upper Attaching
Screws | 2. Glass Run Channel
Lower Attaching
Screws | 4. Replacement Window
Regulator Attaching
Holes | 5. Door Lock Attaching
Screws |
| | 3. Inner Panel Cam
Attaching Screws | | 6. Inside Remote Handle
Attaching Screw |

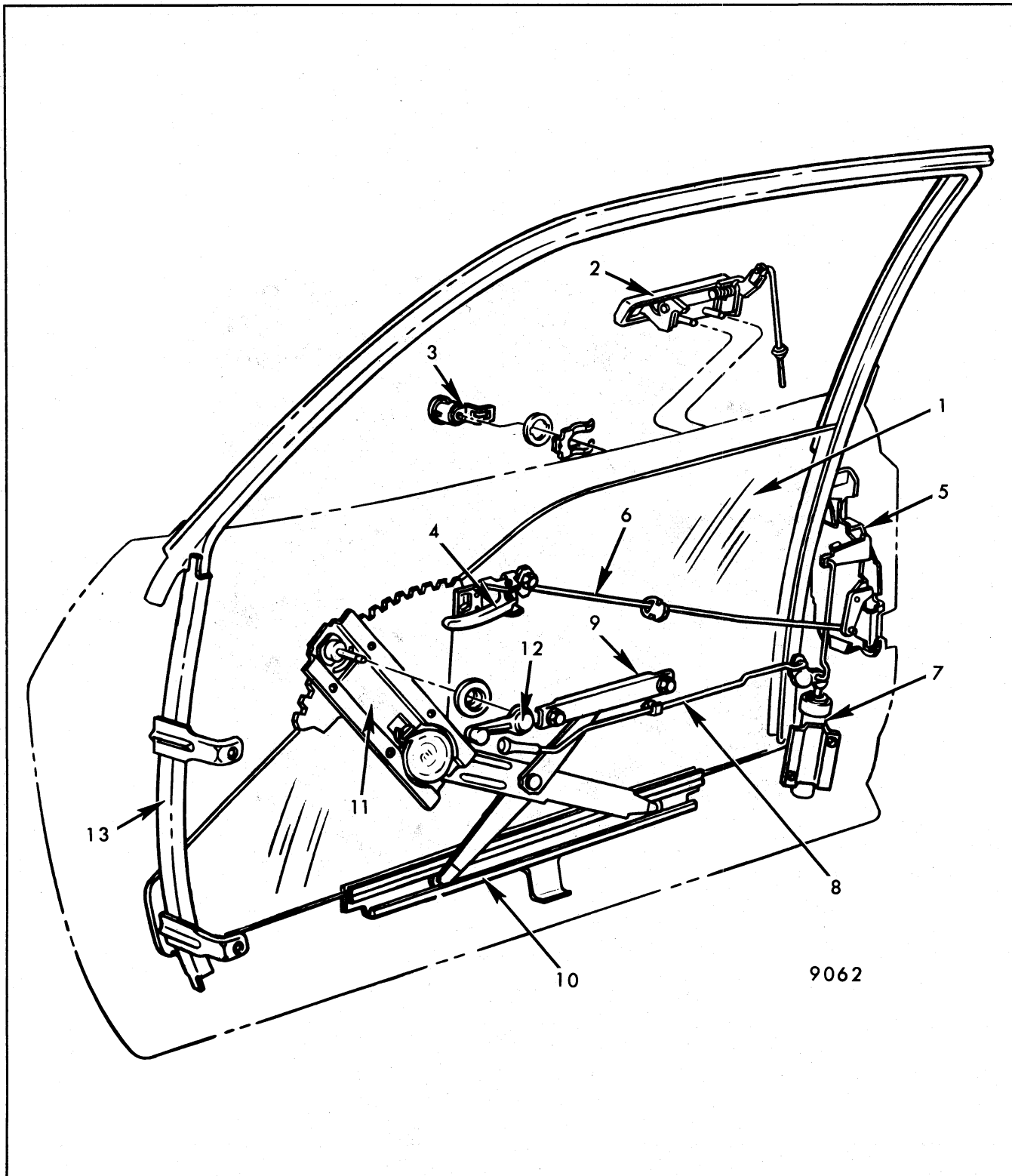


Fig. 5-64 - Door Hardware - "H-27" Style

- | | | | |
|-------------------------|---|--------------------------------|--------------------------------|
| 1. Window | 6. Inside Handle to Lock Connecting Rod | 9. Inner Panel Cam | 12. Window Regulator Handle |
| 2. Outside Handle | 7. Power Door Lock Solenoid (Opt.) | 10. Lower Sash Channel and Cam | 13. Glass Run Channel Retainer |
| 3. Lock Cylinder | 8. Inside Locking Rod | 11. Window Regulator | |
| 4. Inside Remote Handle | | | |
| 5. Door Lock | | | |

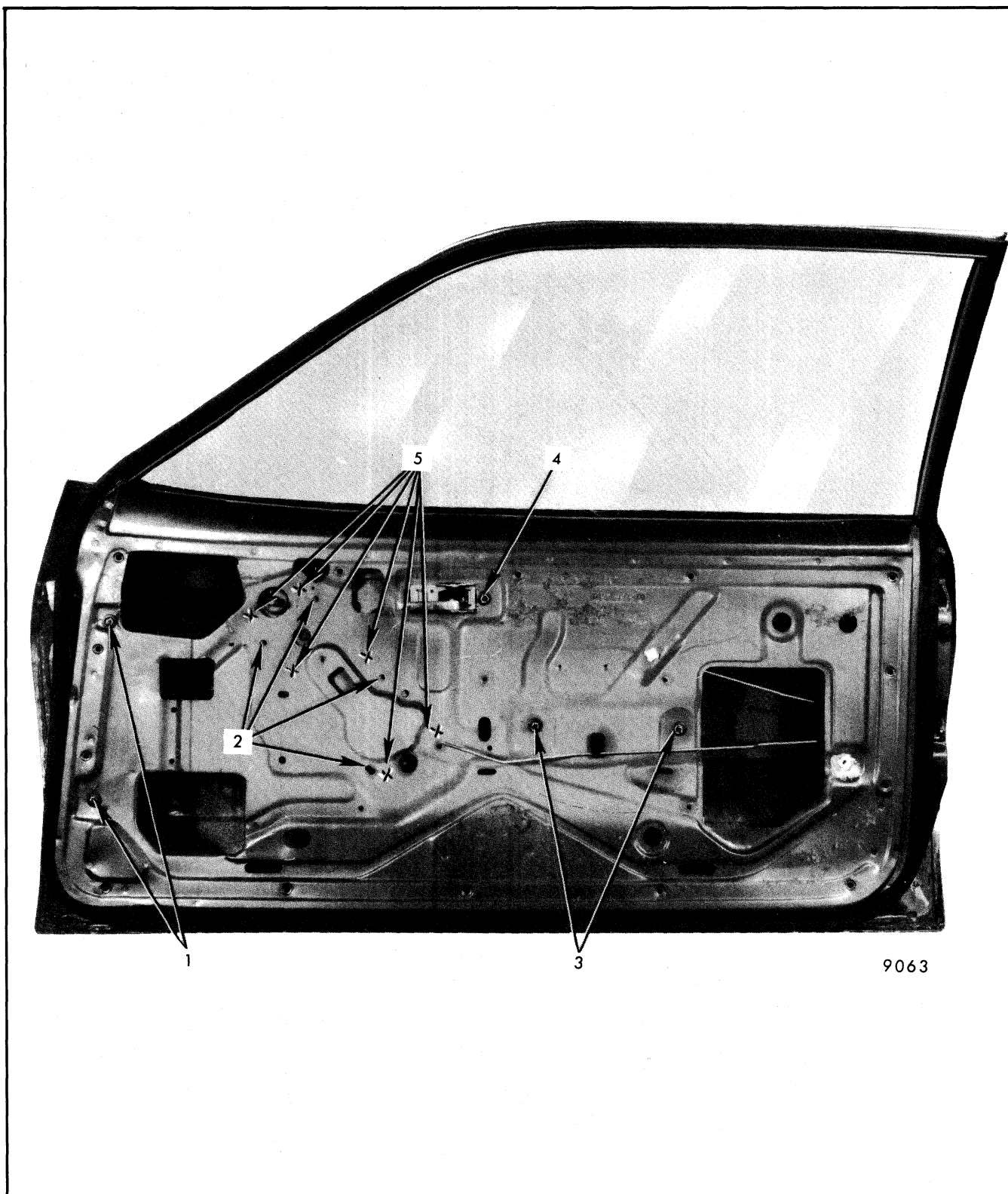
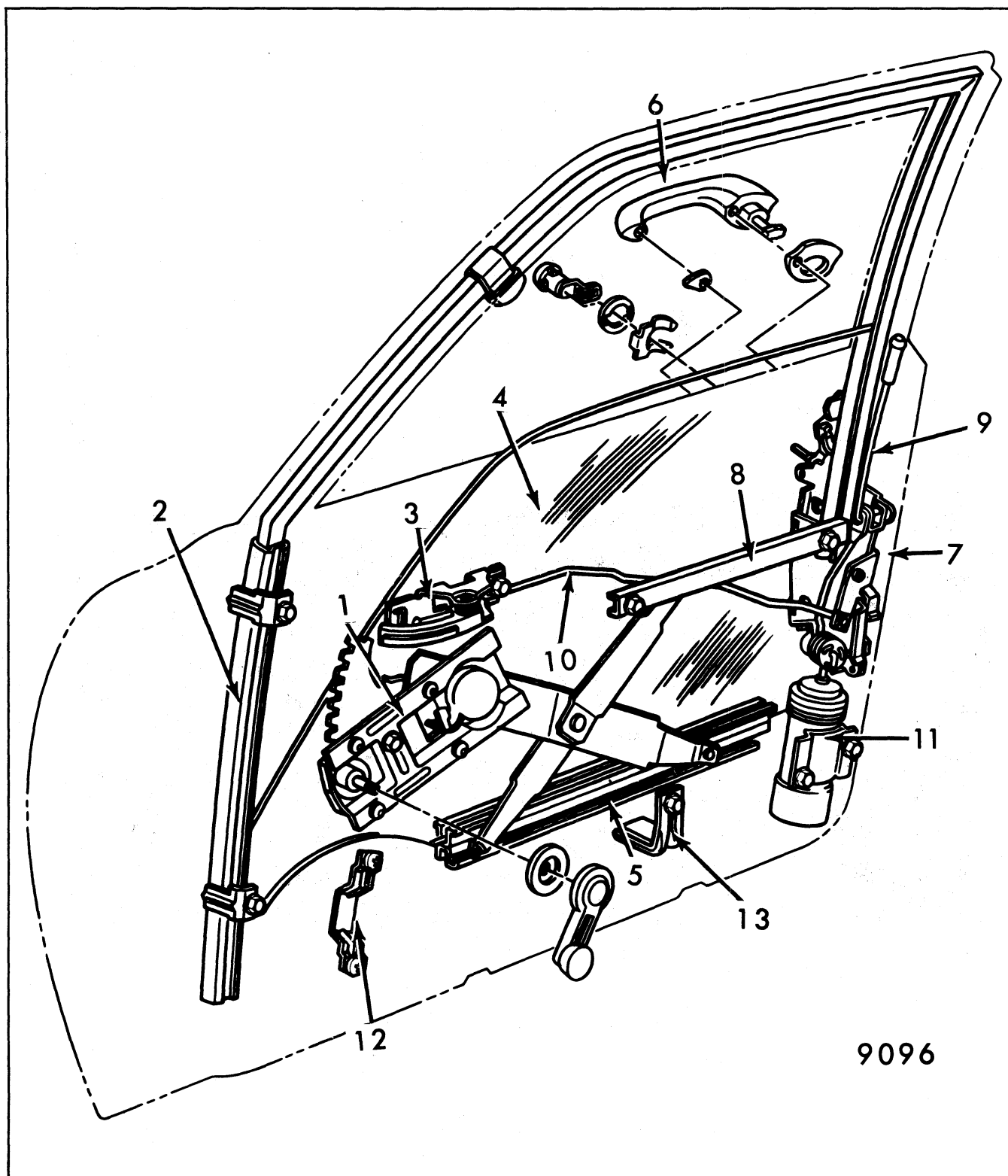


Fig. 5-65 - Door Hardware Attachments - "H-27" Style

- | | | | |
|---------------------------------------|---|---|------------------------------------|
| 1. Glass Run Channel Attaching Screws | 2. Replacement Window Regulator Attaching Holes | 3. Inner Panel Cam Attaching Screws | 5. Window Regulator Weld Locations |
| | | 4. Inside Remote Handle Attaching Screw | |



9096

Fig. 5-66-Front Door Hardware - "X" Styles

- | | | | |
|-------------------------------|---------------------------|--|-------------------------------------|
| 1. Window Regulator | 4. Window Assembly | 7. Door Lock | 11. Power Door Lock Solenoid (Opt.) |
| 2. Glass Run Channel Retainer | 5. Lower Sash Channel Cam | 8. Inner Panel Cam | 12. Anti-Rattle Support |
| 3. Inside Remote Handle | 6. Outside Handle | 9. Inside Locking Rod | 13. Down-Travel Support |
| | | 10. Inside Handle to Lock Connecting Rod | |

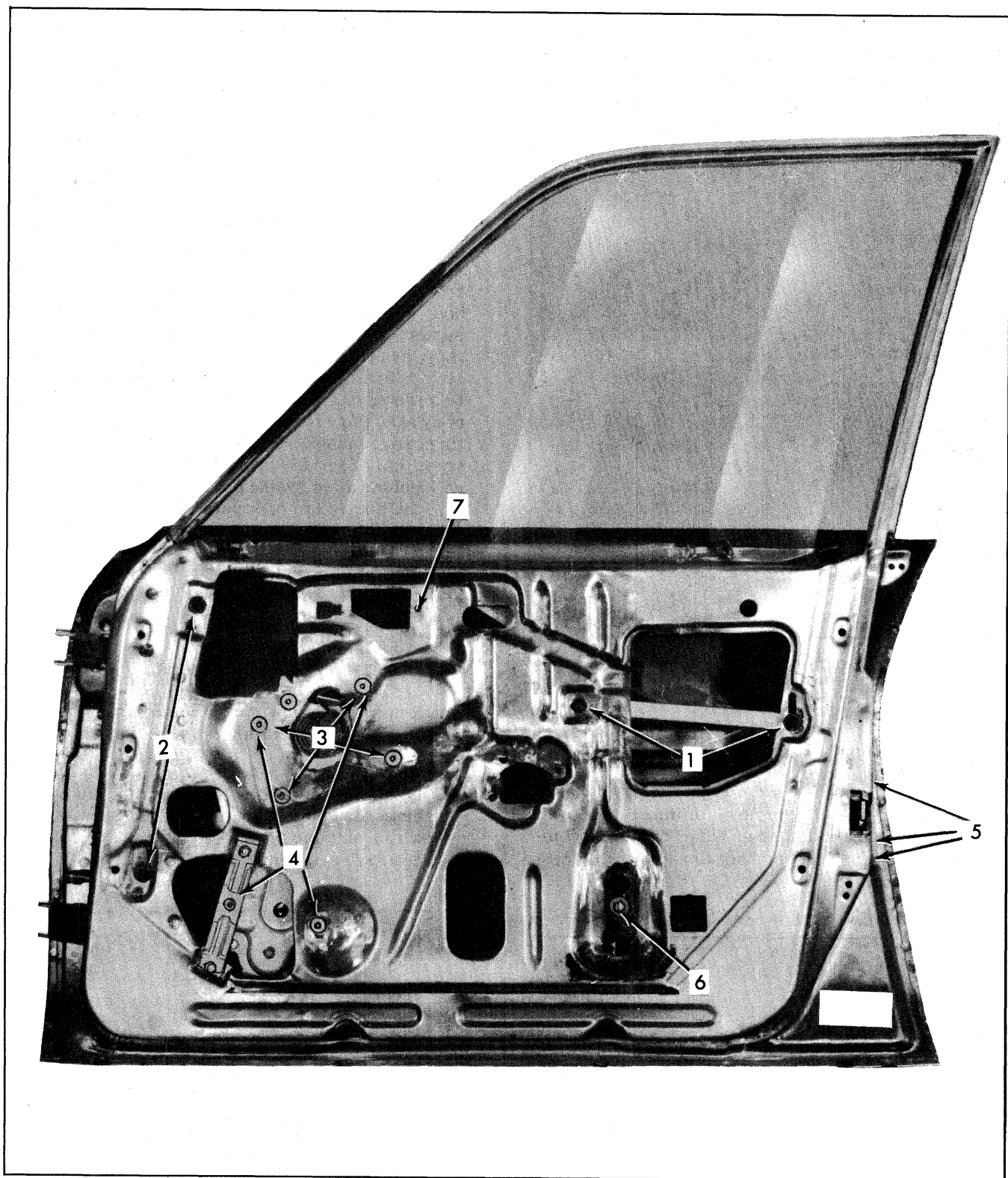


Fig. 5-67-Front Door Hardware Attachments - "X" Styles

- | | | | |
|--|---|--|---|
| 1. Inner Panel Cam
Attaching Screws | 3. Window Regulator
Attaching Rivets
(Manual Regulator) | 4. Window Regulator
Attaching Rivets
(Power Regulator) | 6. Down-Travel Support
Attaching Screw |
| 2. Glass Run Channel
Attaching Screws | | 5. Door Lock Attaching
Screws | 7. Inside Handle
Attaching Hole |

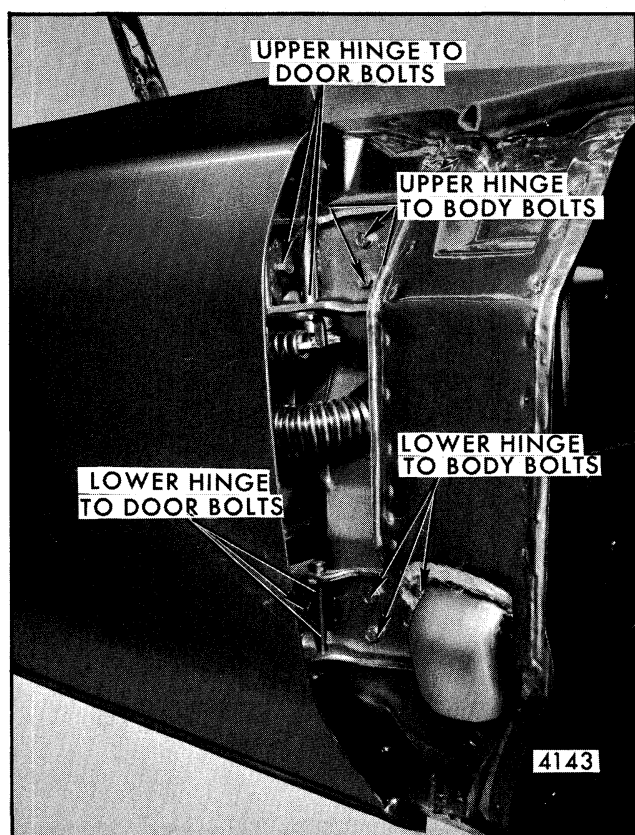


Fig. 5-68-Typical Front Door Hinge Attachment - All Except "X and H" Styles

Torque hinge attaching bolts 17 to 22 foot pounds.

NOTE: On all styles, removal of upper and lower hinges from body hinge pillar can be accomplished with the door removed and without loosening front fender.

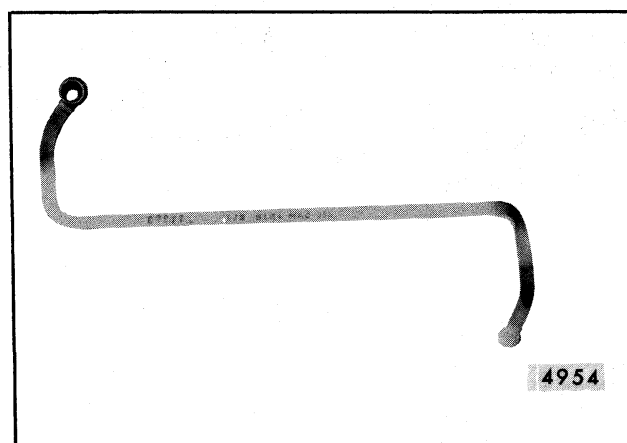


Fig. 5-69-Front Door Hinge Tool J-24353 or Equivalent - "A, B, C, E and F" Styles

FRONT DOOR HINGES - "H and X" Styles

All "H and X" front door hinges are constructed of steel and are welded to the door and body hinge pillars. Because of the positive attachment of the hinge assembly, all adjustment provisions have been eliminated. However, a removable hinge pin has been provided for removal of the door assembly from the body. Replacement hinges are serviced as an assembly. DOOR SIDE hinges are pierced to permit bolt-on installation into tapped anchor plates. BODY SIDE of service replacement hinges DO NOT have bolt-on provisions and must be arc-welded to the body hinge pillar. Tapped anchor plates must be used instead of nuts and washers to insure structural integrity when replacing a hinge assembly. Anchor plates are not furnished with the hinge assembly and must be ordered separately. In addition, door side and body side hinge straps, hinge pins, bushings and "E" rings are available as separate service parts for "X" styles only. Service replacement hinge assemblies will include a removable pin and "E" ring retainer so that the hinges can be separated for individual door side and/or body side strap replacement (refer to Fig. 5-70). Both "H and X" doors have an integral two stage hold-open feature that is found on the "X" lower and "H" upper hinges.

DOOR REMOVAL - "X" Styles

1. Remove "E" ring (snap retainer) from lower end of both upper and lower hinge pins (Fig. 5-70).
2. Disengage door hold-open spring from lower hinge assembly by prying upward against spring with a suitable prying tool (Fig. 5-71). Use care not to damage hold-open link.

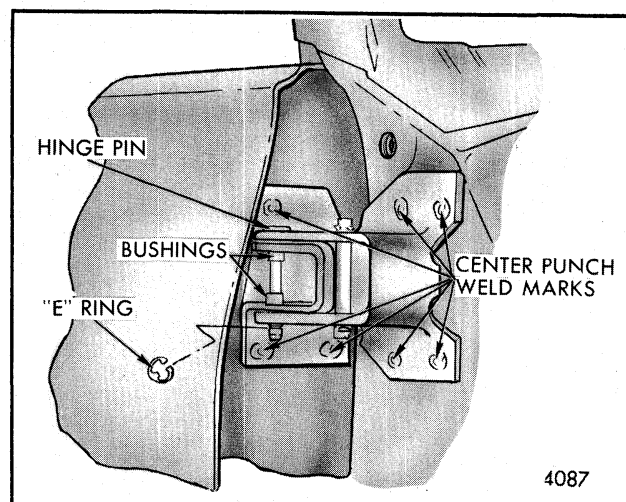


Fig. 5-70-Front Door Hinge "E" Ring Removal - "X" Styles

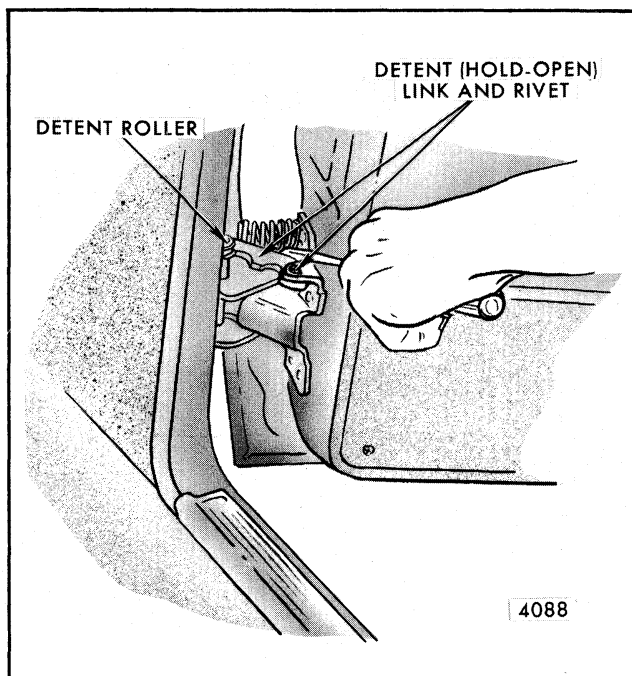


Fig. 5-71-Front Door Hinge "Hold-Open Spring" Removal - "X" Styles

WARNING: COVER SPRING WITH SHOP TOWEL TO PREVENT SPRING FROM "FLYING" AND POSSIBLY CAUSING PERSONAL INJURY OR DAMAGE.

3. Using tapered type tool, drive wedge between head of hinge pin and hinge. This will raise pin sufficiently to force serrated shoulder on the upper end of the hinge pin out of hinge.
4. With aid of a helper to support door at rear edge, remove loosened hinge pins. Then remove door assembly.

DOOR INSTALLATION - "X" Styles

1. With aid of a helper, place door into position and insert hinge pins and "E" rings.
2. Using spring compressing tool (J-23497 or equivalent), install hold-open spring in lower hinge (Figs. 5-72 and 5-73).

NOTE: When installing hold-open spring on tool J-23497 or equivalent, position spring so that the cut end of the spring is in line with the center of the blade on the straight jaw. Figure 5-72 illustrates position of spring for right side installation (left side installation would utilize the other end of the blade). The other end of the spring should be seated over the hook on the opposite jaw of the tool.

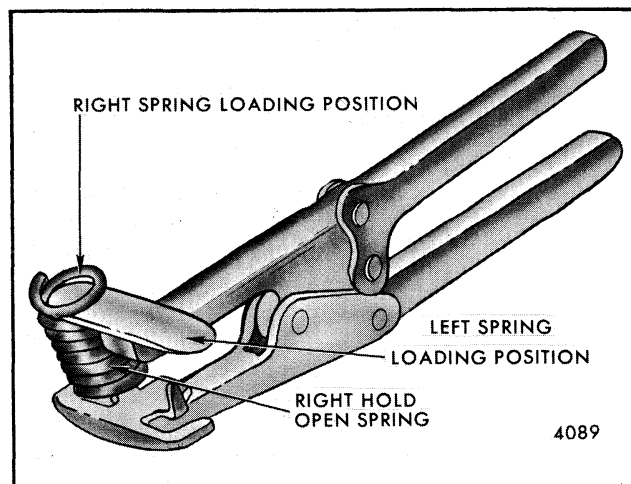


Fig. 5-72-Hold-Open Spring, Loading Positions Using Tool J-23497 or Equivalent - "X" Styles

WARNING: BE SURE SPRING IS SEATED PROPERLY BEFORE COMPRESSING TO PREVENT THE SPRING FROM SLIPPING OUT OF THE TOOL AND POSSIBLY CAUSING DAMAGE OR PERSONAL INJURY.

DOOR SIDE HINGE STRAP - "X" Styles

Removal

1. Remove door trim assembly and inner panel water deflector, as previously described.

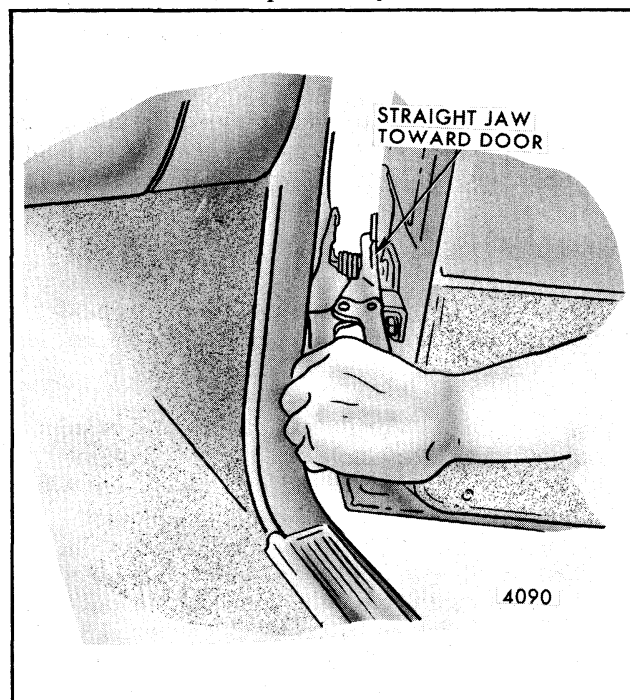


Fig. 5-73-Front Door Hinge Hold-Open Spring Installation Using Tool J-23497 or Equivalent - "X" Styles

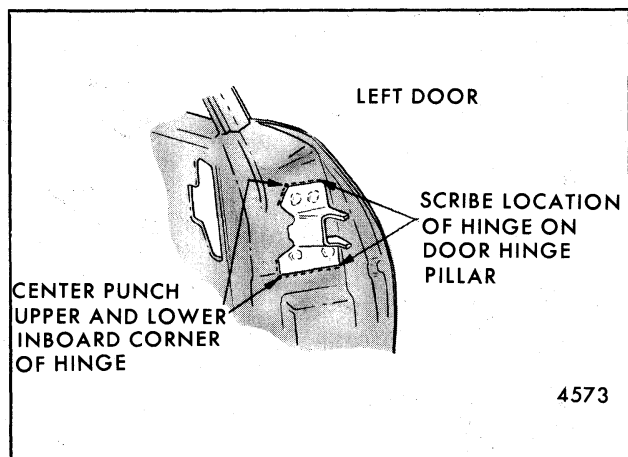


Fig. 5-74-Locating Hinge on Door Hinge Pillar - "X" Styles

2. Remove door from body as previously described.
3. Center punch and scribe location of hinge on door hinge pillar (refer to Fig. 5-74).
4. Center punch visible weld marks on hinge base as shown in Figure 5-70 and drill a 1/8" pilot hole completely through welds at center punch marks.
5. Using 1/8" hole as a guide, drill out welds with a 1/2" drill bit.

CAUTION: When drilling out welds, drill only deep enough to penetrate hinge base to release hinge from panel as shown in Figure 5-75.

6. A slight amount of weld may still retain hinge base to panel. Drive a chisel between panel and hinge base to separate hinge from panel.

Installation

1. Position the replacement bolt-on hinge within scribe marks on the hinge pillar facing and center punch bolt hole locations.
2. Using a 1/2" drill bit, drill hinge attaching holes. The 1/2" holes in the hinge pillar will provide for some in and out adjustment when reinstalling the door assembly.
3. Coat surface of hinge that mates with hinge pillar with medium bodied sealer and install hinge using specified 5/16" x 1-1/2" bolts and service hinge anchor plates previously described. Torque hinge attaching bolts 17 to 22 foot-pounds.
4. Install door to body as previously described.

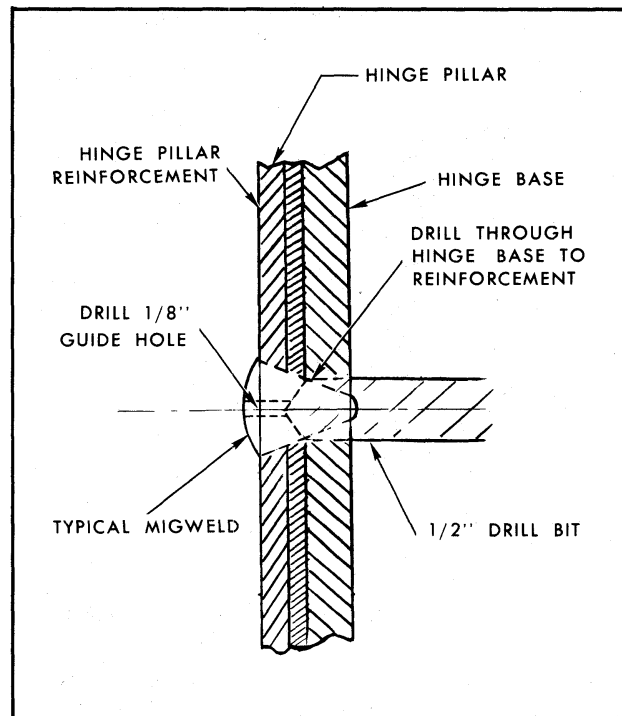


Fig. 5-75-Typical Weld

BODY SIDE HINGE STRAP - "X" Styles

Removal

1. Remove door assembly from body as previously described.
2. Locate hinge position on body hinge pillar (refer to Fig. 5-76).
 - a. Scribe location of upper and lower hinge tabs on hinge pillar.
 - b. Measure exactly 1-3/4" rearward from upper and lower forward flange of hinge. Center

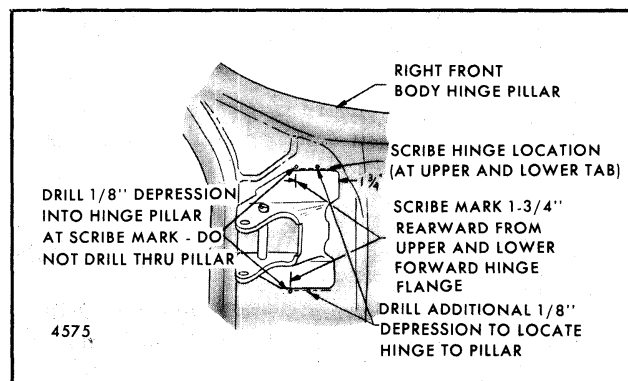


Fig. 5-76-Locating Hinge Position on Body Hinge Pillar - "X" Styles

punch and drill indentation at this location into (not through) hinge pillar facing with 1/8" drill bit.

NOTE: Drill indentation will serve as a locator for the replacement hinge and will not be lost during torching operation.

- c. Drill additional 1/8" locator at the upper and lower hinge tab immediately forward of the measured locator.
3. Protect the carpet and door sill plate area adjacent to the front body hinge pillar with wet cloths.
4. Using a cutting torch, separate main portion of hinge from upper and lower tabs. After main portion has been removed, vertically cut upper and lower hinge tabs with cutting torch as shown in Figure 5-77.
5. Mig welds holding separated hinge tabs can be broken by twisting or rotating the individual hinge tab segments with suitable tool, such as grip type pliers, pipe wrench, etc. (refer to Fig. 5-78).
6. Dress and prepare hinge pillar facing as required for replacement hinge.

Installation

1. Measure 1-3/4" rearward from upper and lower weld tab forward flange of replacement hinge, and mark dimension on hinge as shown in Figure 5-79.
2. Locate replacement hinge to scribe marks and drill depressions identifying 1-3/4" dimension (Fig. 5-80). Tack in place with arc weld at upper and lower hinge tabs.

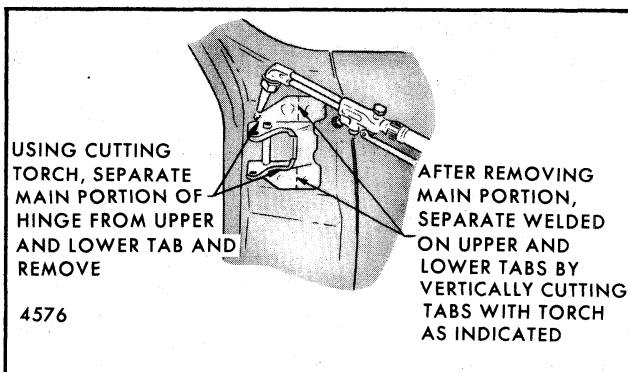


Fig. 5-77-Body Side Hinge Strap Removal - "X" Styles

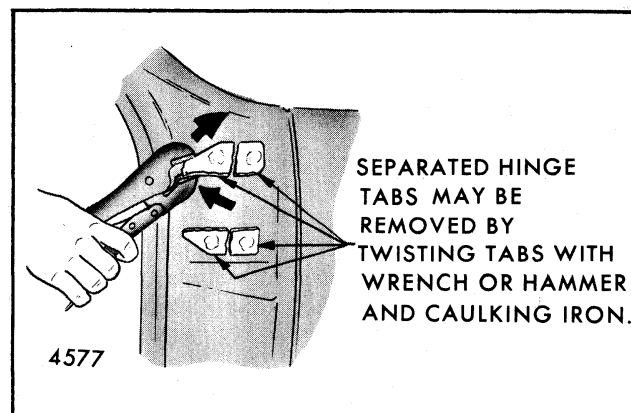


Fig. 5-78-Body Side Hinge Strap Removal - "X" Styles

3. Re-hang door and install hinge pins to insure proper alignment of door to opening.
4. Remove door and complete arc welding of hinge. Arc weld completely around upper and lower hinge tab as shown in Figure 5-81.
5. Wire brush and clean welds as required. Seal around perimeter of hinge with a paintable sealer.
6. Refinish hinge pillar and replacement hinge as required.
7. Install door assembly as previously described.

DOOR REMOVAL AND INSTALLATION - "H" Styles

1. Remove "E" ring (snap retainer) from end of both upper and lower hinge pins (Fig. 5-83).

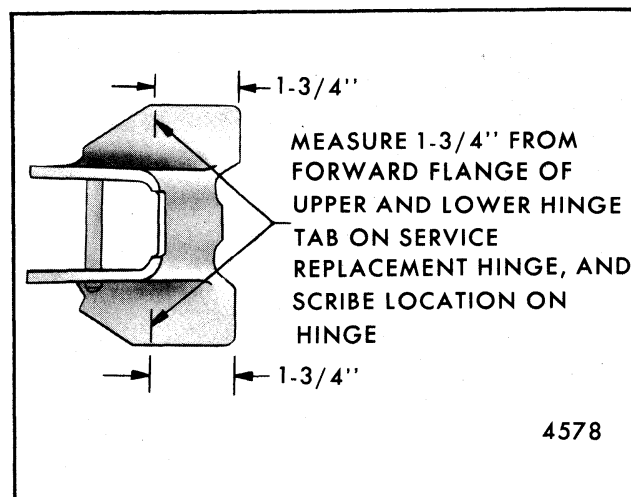


Fig. 5-79-Body Side Hinge Strap Installation - "X" Styles

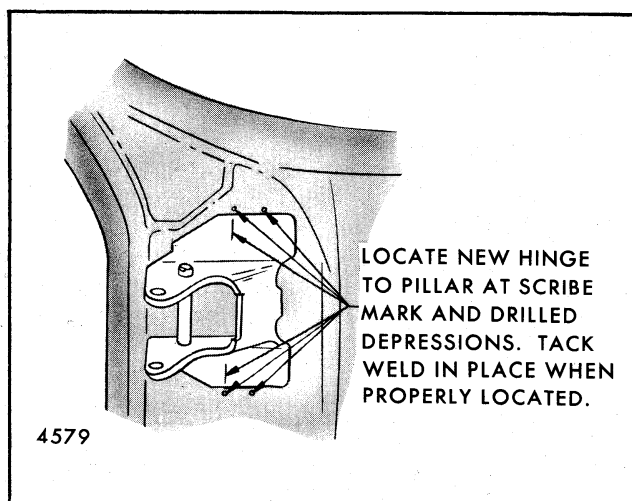


Fig. 5-80-Body Side Hinge Strap Installation - "X" Styles

2. Using tool J-23568 or equivalent and the aid of a helper to support the door in an open position, drive wedge between the head of the hinge pin and the upper hinge as shown in Figure 5-82. Driving wedge at this location will partially remove the hinge pin from the hinge assembly. To completely remove the hinge pin, tap on the hinge pin removing tool as shown in Figure 5-83. Repeat operation outlined above on lower hinge.
3. To install the door assembly, place the door into position and install the hinge pins by tapping on head of hinge pin until the pin is fully seated. Install hinge pin "E" ring retainers on end of hinge pins.

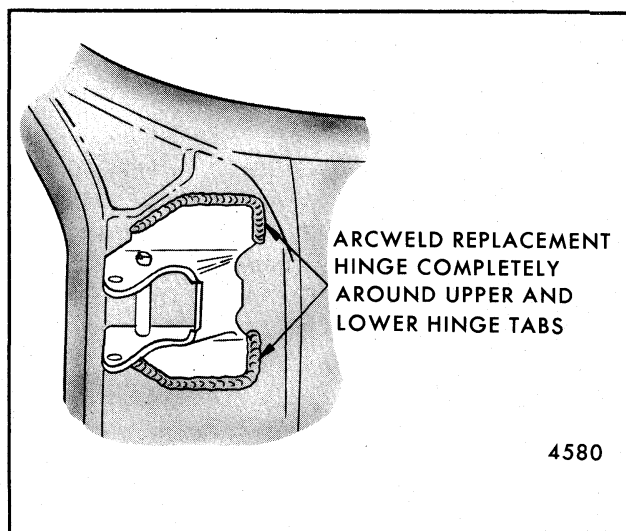


Fig. 5-81-Body Side Hinge Strap Installation - "X" Styles

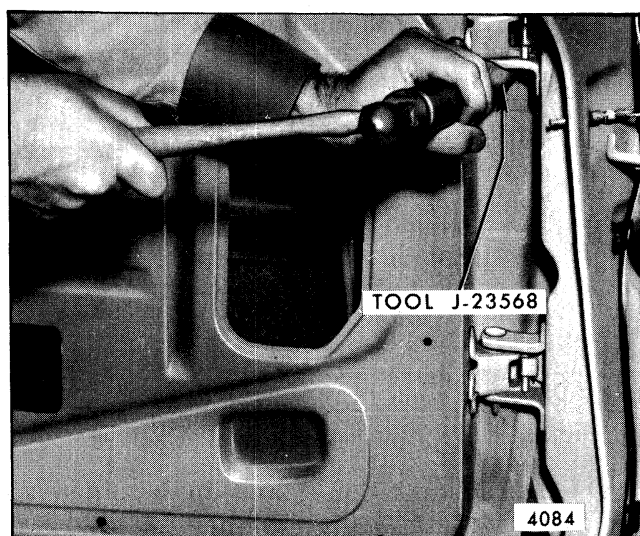


Fig. 5-82-Door Hinge Pin Removal - "H" Styles

DOOR SIDE HINGE STRAPS - "H" Styles

Removal and Installation

1. Remove door trim assembly, inner panel water deflector and door assembly from body as previously described.

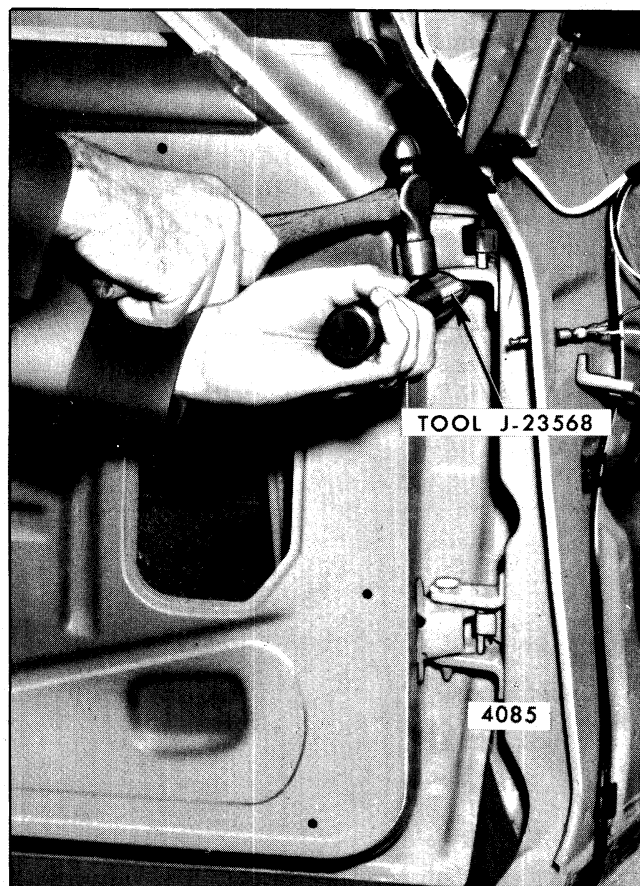


Fig. 5-83-Door Hinge Pin Removal - "H" Styles

2. Scribe location of hinge on hinge pillar and center punch visible weld marks on hinge base as shown in Figure 5-84. Drill a 1/8" pilot hole completely through the welds at center punch marks.
3. Using 1/8" hole as a guide, drill out welds with at least a 3/8" drill bit, but not larger than a 1/2" drill bit.

CAUTION: When drilling out welds, drill only deep enough to penetrate hinge base to release hinge from panel as shown in Figure 5-75.

A slight amount of weld may still retain hinge

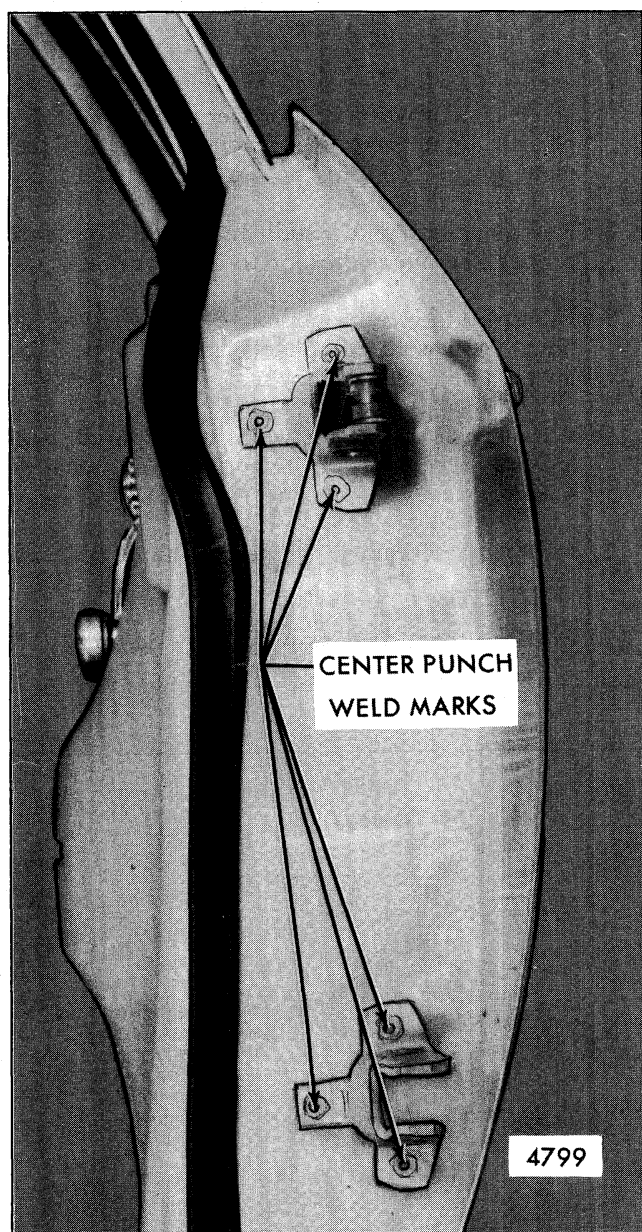


Fig. 5-84-Typical Weld-On Hinge Attachment - "H" Styles

base to panel. Drive a chisel between panel and hinge base to separate hinge from panel. Exercising care not to remove scribe marks from hinge pillar, grind or file remaining weld marks off pillar until flush with adjacent surface.

NOTE: Weld-on hinges cannot be reinstalled. A new service replacement door side hinge strap with bolt-on provisions must be installed (Fig. 5-85).

To restore acceptable structural integrity when installing replacement hinges, it is necessary to use tapped anchor plates instead of nuts and washers. Anchor plates, bolts, bushings, hinge pins, hinge pin retainers and door side and body side hinge straps are available separately (Fig. 5-85).

4. To install new hinge, position the replacement bolt-on hinge within the scribe marks on the hinge pillar facing. Using hinge attaching holes as a guide, center punch bolt hole locations on door hinge pillar.
5. Using a 1/2" drill bit, drill hinge attaching holes. The 1/2" holes in the hinge pillar will provide for some inboard or outboard adjustment when reinstalling the door assembly.
6. Coat hinge surface that mates with hinge pillar with medium-bodied sealer. Install hinge strap using two countersunk bolts (Part No. 7667647 or equivalent), one hex-head bolt (Part No. 8746511 or equivalent), and one anchor plate (Part No. 9840410 or equivalent) as shown in Fig. 5-85. Torque hinge bolts to 17 to 22 foot-pounds.
7. Install door to body and adjust for proper alignment. Install all previously removed parts.

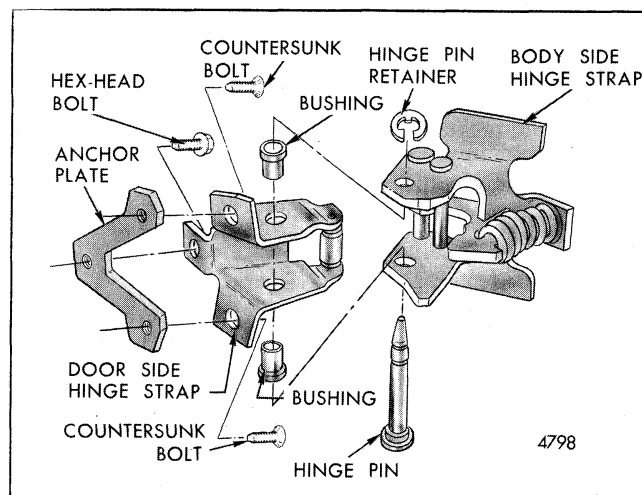


Fig. 5-85-Door Hinge Components - "H" Styles

BODY SIDE HINGE STRAPS - "H" Styles

Removal and Installation

1. Remove door assembly from body hinge pillar as previously described.
2. Scribe hinge location at upper and lower hinge tab and drill indentation into (not through) hinge pillar facing with a 1/8" drill bit at the corners of the upper and lower hinge tabs as shown in Figure 5-86. Drilled depressions provide location for the replacement hinge and should not be lost during torching operation.

NOTE: If door is not in proper alignment, compensate for misalignment as required when performing step 7.

3. Protect the carpet and door sill plate area adjacent to the front body hinge pillar with wet cloths.
4. Using a cutting torch, separate main portion of hinge, including hold-open link and spring, from upper and lower tabs. After main portion has been removed, vertically cut upper and lower hinge tabs with cutting torch as shown in Figure 5-87.
5. Mig welds holding separated hinge tabs can be broken by twisting or rotating the individual tabs as shown in Figure 5-88, using vise grip type pliers, pipe wrench or hammer and caulking iron (or other suitable tools).
6. Dress and prepare hinge pillar facing as required for replacement hinge.
7. Position replacement hinge within scribe and drill marks and tack in place with arc weld at upper and lower hinge tabs.

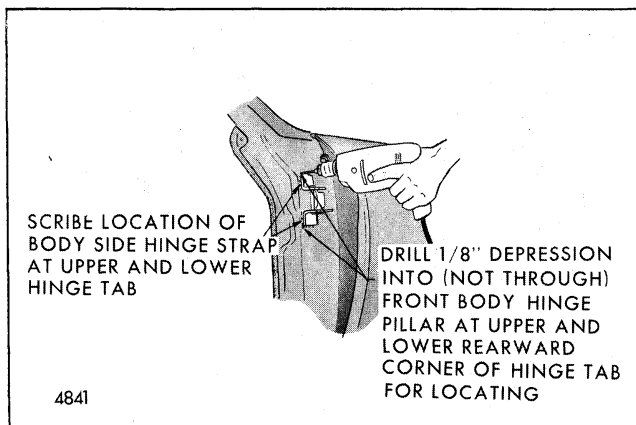


Fig. 5-86-Body Side Door Hinge Strap Removal - "H" Styles

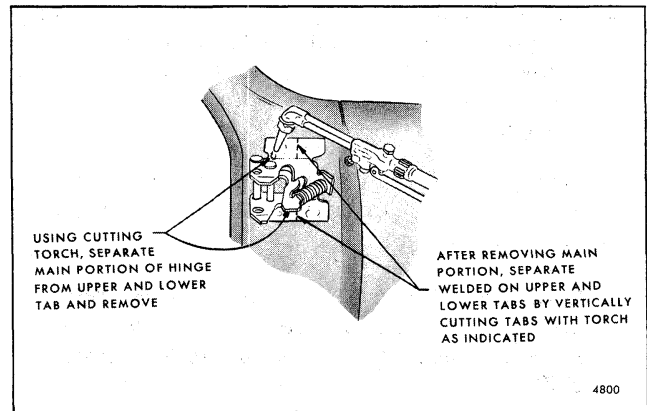


Fig. 5-87-Body Side Door Hinge Strap Removal - "H" Styles

NOTE: If door was not in proper alignment, compensate for misalignment by adjusting replacement hinge location.

8. Re-hang door and install hinge pins to insure proper alignment of door to opening.
9. Remove door and complete arc welding of hinge. Arc weld completely around upper and lower hinge tabs as shown in Figure 5-89.
10. Wire brush and clean welds as required. Seal around perimeter of hinge with a paintable sealer.
11. Refinish replacement hinge and hinge pillar as required.
12. Re-hang front door as previously described.

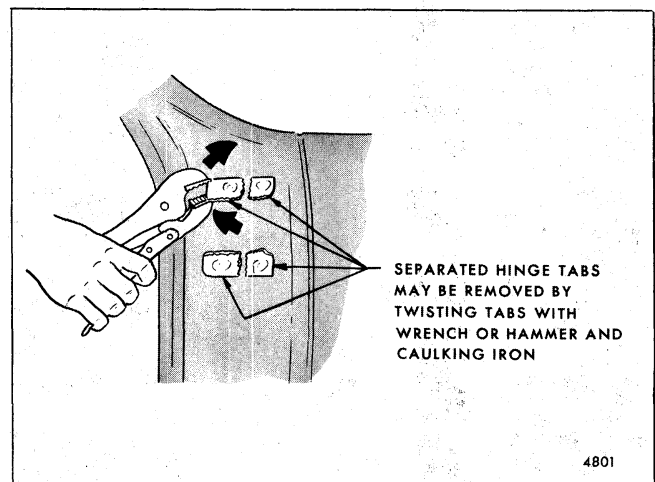


Fig. 5-88-Body Side Door Hinge Strap Removal - "H" Styles

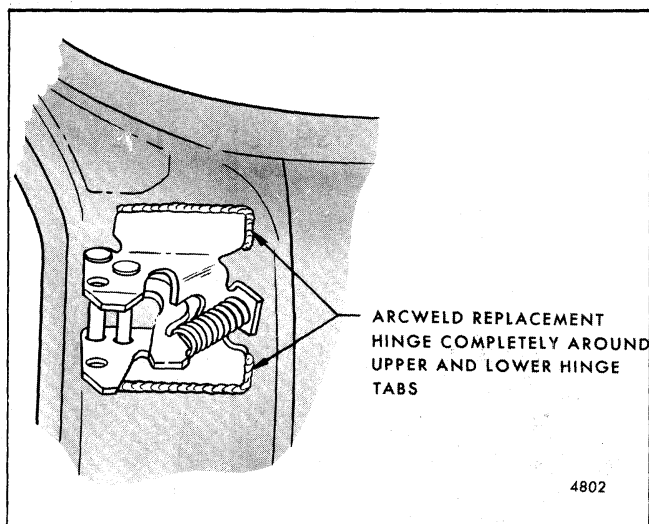


Fig. 5-89-Body Side Door Hinge Strap Installation - "H" Styles

INSIDE LOCKING ROD

Removal and Installation - All Coupe Styles

1. On "H and X" styles, remove door trim assembly. On "A, B, C, E and F" styles, remove upper and lower portion of door trim assembly. Peel inner panel water deflector back sufficiently to gain access to inside locking rod retainers ("12" in Fig. 5-55 is typical).
2. Slide inside locking rod to door inner panel plastic retainers in direction of arrows shown in Figure 5-55 (at "12").
3. Disengage rod from lock and remove locking rod through beltline.
4. To install, reverse removal procedure.

Removal and Installation - All Sedan Styles

1. Remove upper and lower portion of door trim assembly on "A, B and C" styles, remove door trim assembly from "X" styles. Peel inner panel water deflector back sufficiently to gain access to spring clip at door lock locking lever.
2. Disengage spring clip securing locking rod to door lock locking lever as previously described in the "Front and Rear Doors" portion of this section.
3. Lift locking rod out through beltline of door.
4. To install, reverse removal procedure.

INSIDE REMOTE HANDLE

All inside remote handles are the pull-in type except for the rear remote handle (right side only) on the Cadillac "E" style which is a pull-up (spindle) type. All remote handles actuate the door lock through a connecting rod. Three types of attachments are used to secure the connecting rod to the remote handle: "A, B, C E" styles use a "snake-in" attachment (shown in Fig. 5-10), "F, H-07-27 and X" styles use a spring clip snap-in attachment, "H (less 07-27)" styles use a hook attachment. Remote handles are attached to the door inner panel with screws or rivets. Replacement service parts initially will require screw attachment changing to pop rivet attachment when warehouse stock of old style handles is depleted.

NOTE: "F" styles with standard trim utilize a pull-in type remote handle that can be removed from the door without trim removal. For removal, refer to door trim assembly removal in "Door Trim" portion of this section.

Removal and Installation - All Styles Except "F" Styles with Standard Trim

1. Raise door window, remove door trim pad (on "A, B, C and E" styles, remove upper and lower portion of door trim assembly) and detach inner panel water deflector.

NOTE: Cadillac "E" right hand doors are equipped with two remote handles, one front (pull-in type) and one rear (spindle type). Attachment of both is similar.

2. Remove screws securing remote handle to door inner panel. If rivet attachment was used, drive out rivet center pin with punch and drill out rivet with 3/16" diameter drill bit.
3. On "A, B, C, E and H (less 07-27)" styles, pivot remote handle to disengage lock connecting rod and remove remote handle. On "F, H-07-27 and X" styles disengage spring clip as described previously in "Front and Rear Door" portion of this section. Disconnect wire to switch on styles equipped with automatic door lock option.
4. If remote handle to lock connecting rod is to be removed, also disengage spring clip retaining rod to lock lever.
5. To install, reverse removal procedure. If replacement handle requires rivet attachment, use steel pop rivet, 3/16" diameter by 5/16" length (USM Part No. SD-62BS or equivalent).

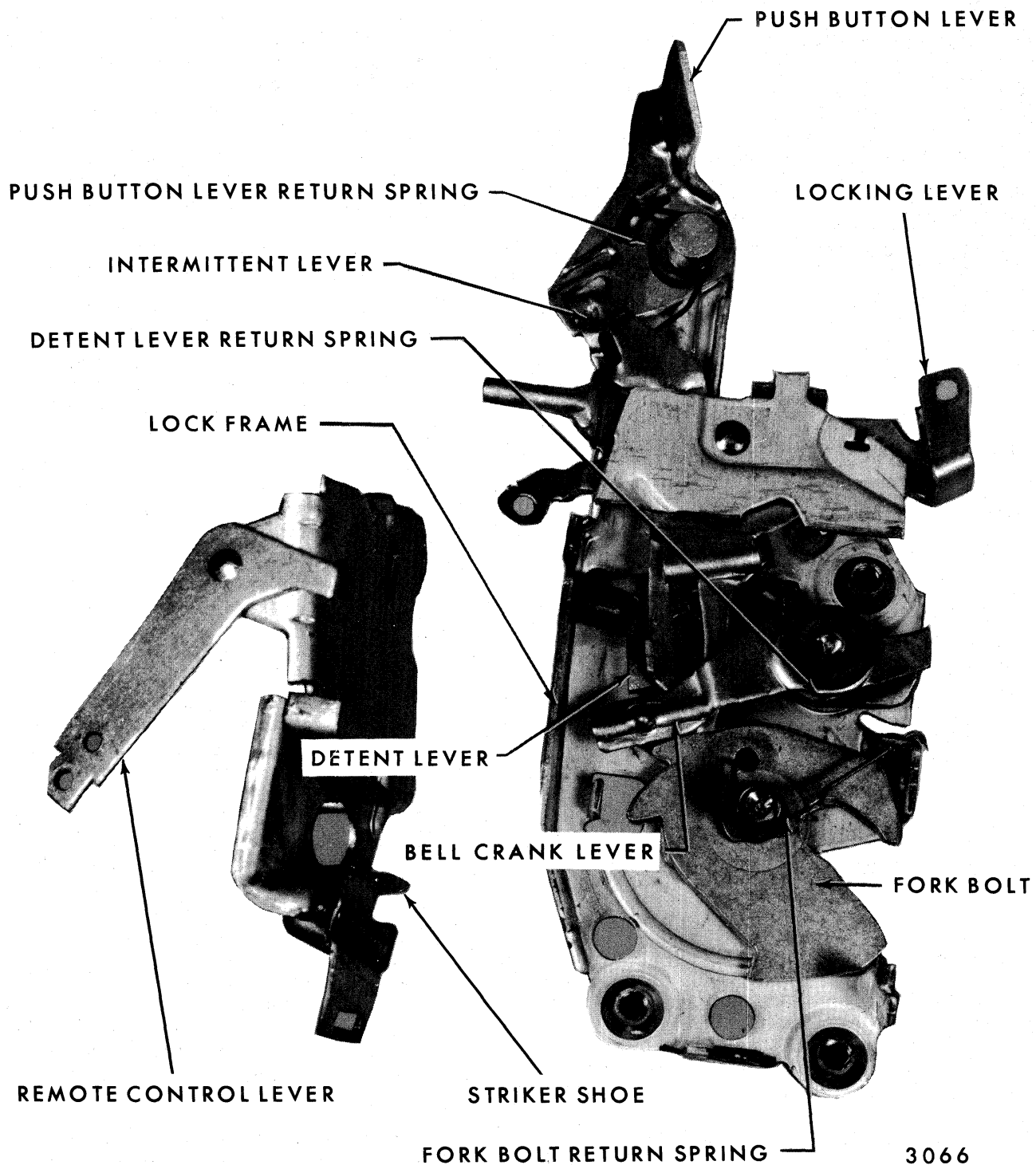


Fig 5-90-Front Door Lock - "F, H and X" Styles

FRONT DOOR LOCK

All styles use the fork bolt lock design which includes a safety interlock feature. The door is secured in a closed position when the door lock fork bolt snaps over and engages the striker bolt. Front and rear doors can be locked from the inside by depressing the door lock button. All doors can be locked

from the outside by simply depressing the interior door lock button and closing the door. The front doors can also be locked by using the appropriate key.

Figures 5-90 and 5-91 depict typical front door locks for the "F, H and X" and "A, B, C and E" styles,

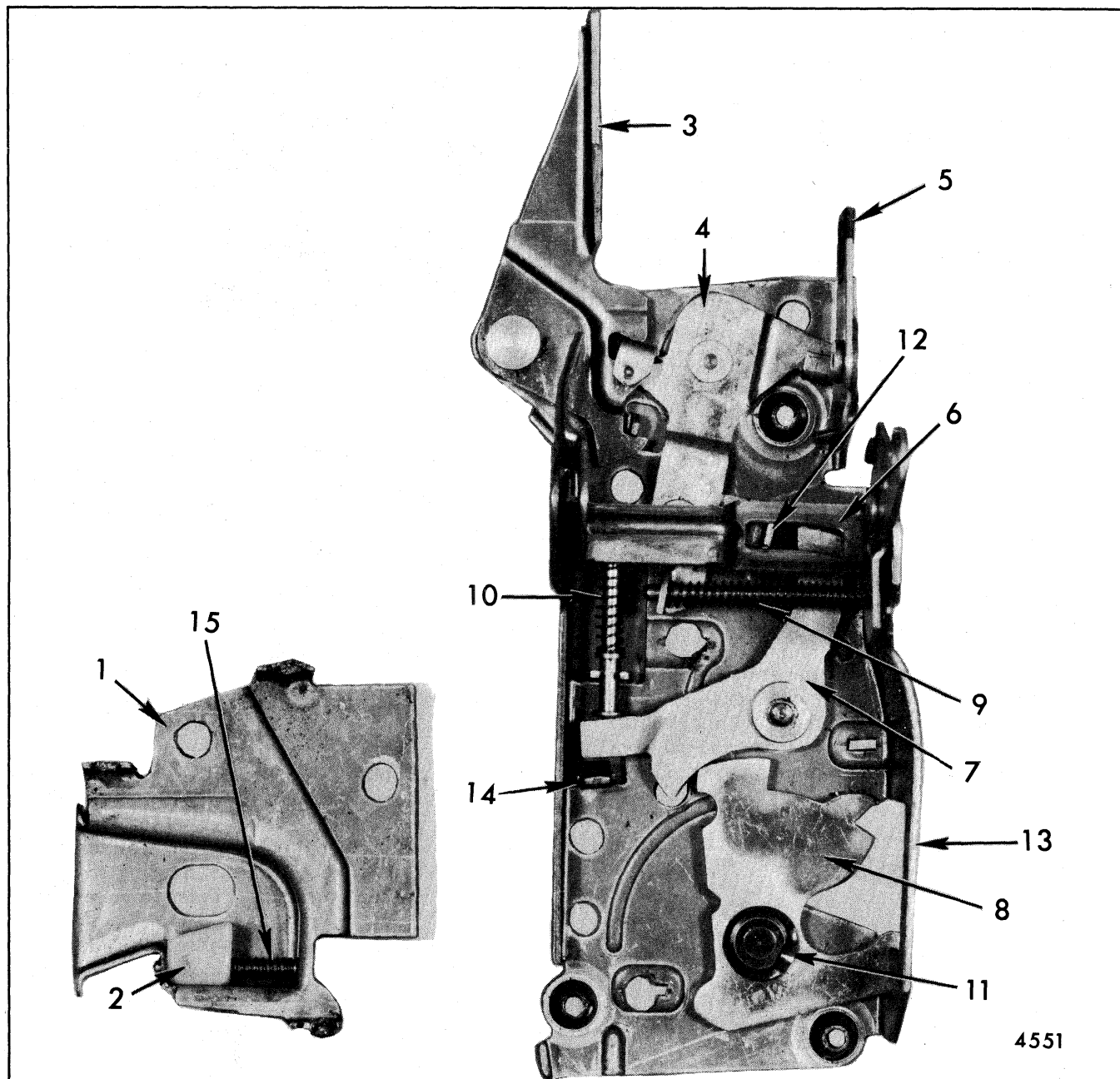


Fig. 5-91-Front Door Lock - "A, B, C and E" Styles

- | | | | |
|-------------------------|------------------------------|--|---------------------------------|
| 1. Lock Back Plate | 6. Locking Lever | 10. Detent Spring | 12. Intermittent Lever |
| 2. Sliding Shoe | 7. Detent Lever | 11. Spring Tension Washer (Replaces Fork Bolt Return Spring) | 13. Lock Frame |
| 3. Push Button Lever | 8. Fork Bolt | | 14. Lock Silencer |
| 4. Transfer Lever | 9. Push Button Return Spring | | 15. Sliding Shoe Pin and Spring |
| 5. Remote Control Lever | | | |

respectively. These illustrations are to be used only for identifying locking problems.

CAUTION: Do not attempt to repair lock discrepancies; correct condition by replacing the lock.

Removal and Installation

1. On "A, B, C and E" styles, raise door window and remove upper and lower portion of trim pad. On "F, H and X" styles remove door trim assembly and peel back the inner panel water deflector sufficiently to gain access to lock assembly.

2. Working through large access hole, disengage remote control to lock connecting rod at lock as specified under "Spring Clips" in preceding "Front and Rear Door" section.

NOTE: On coupe styles, it may be necessary to remove inside locking rod. On other styles, it may be necessary to remove the inside remote handle and then remove the lock and connecting rod as an assembly.

3. On styles equipped with electric door locks, remove electric solenoid as described in "Front and Rear Door" section.
4. Remove three screws securing lock to door lock pillar ("12", Fig. 5-57) and remove lock assembly from door.

NOTE: On four-door styles, the design of the lock to inside locking attaching clip does not allow disengagement of rod from lock with lock in an installed position. This rod can be removed from lock in a bench operation after removal of lock assembly.

5. To install, reverse removal procedure. Torque door lock attaching screws to 80 to 100 inch-pounds.

LOCK CYLINDER ASSEMBLY

Removal and Installation

1. On "F, H and X" styles remove door trim pad. On "A, B, C and E" styles remove upper and lower portion of door trim assembly. Raise door window and detach inner panel water deflector. On styles equipped with anti-theft system disconnect wire at door guard beam (Fig. 5-94).
2. With a screwdriver or other comparable tool,

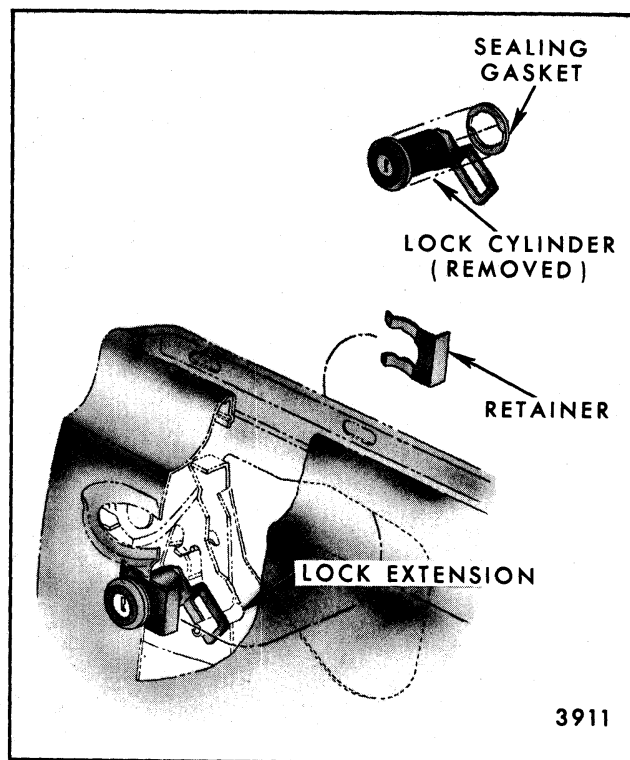


Fig. 5-92-Door Lock Cylinder Removal

slide lock cylinder retaining clip (on door outer panel) out of engagement and remove lock cylinder from door (Fig. 5-92).

3. To install, reverse removal procedure.

Disassembly and Assembly

1. Remove lock cylinder from door as previously described.
2. With a pointed tool, disengage pawl retaining clip and remove pawl (Fig. 5-93).
3. With a flat-bladed tool, straighten out crimped-over edges of lock cylinder housing scalp and remove scalp and lock cylinder from housing.

NOTE: Refer to General Information Index (Section 1 of this manual) for lock cylinder coding.

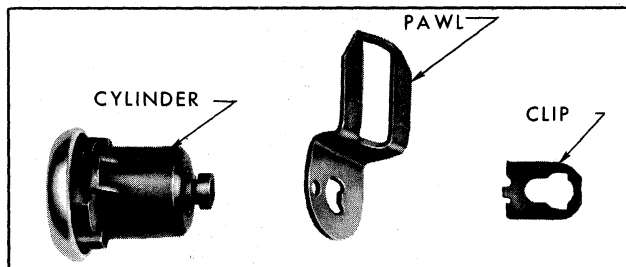


Fig. 5-93-Door Lock Cylinder Assembly

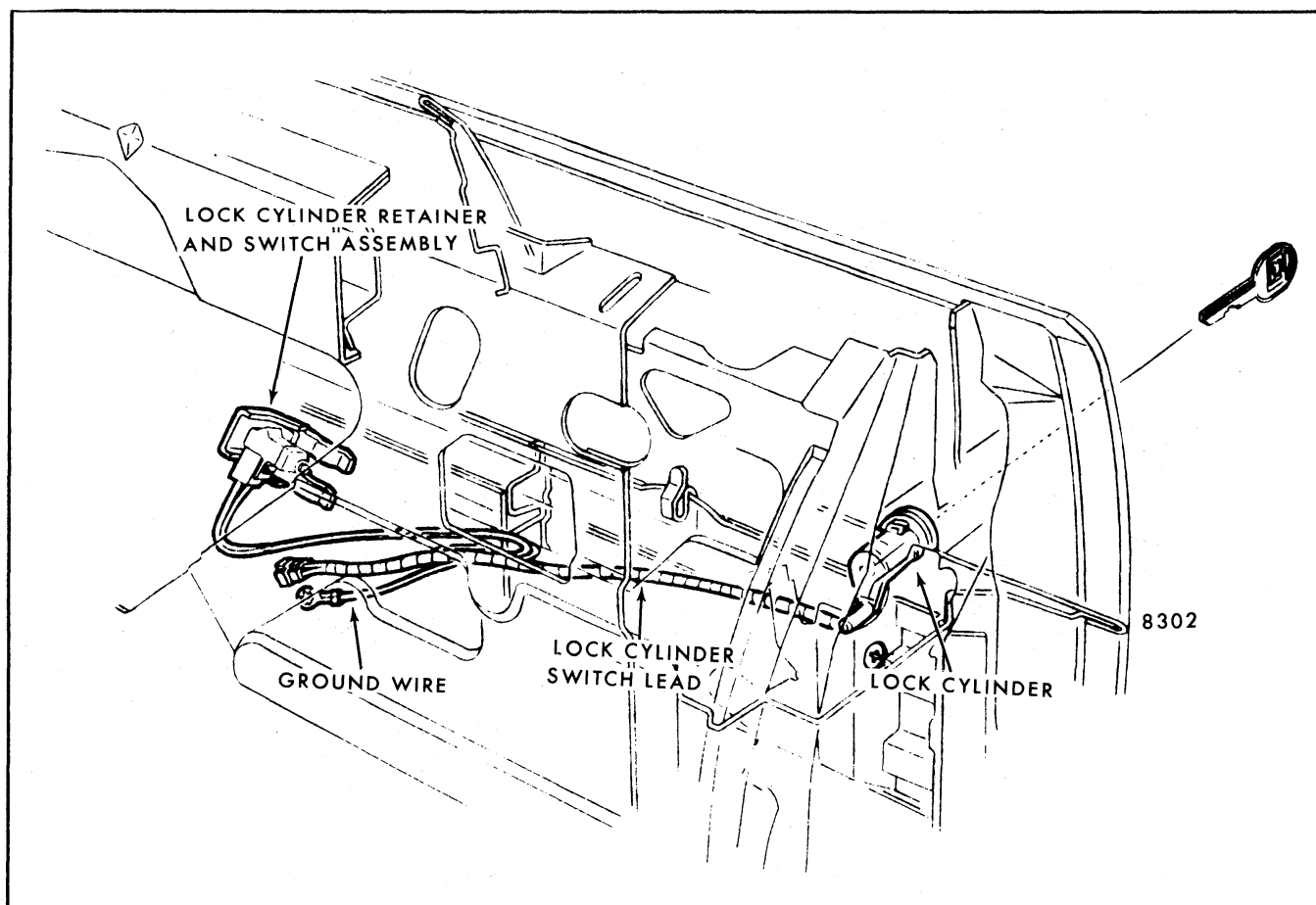


Fig. 5-94-Anti-Theft Door Lock Assembly

4. To install, reverse removal procedure.

NOTE: Lock cylinder housing scalp is usually damaged in removal procedure and, therefore, must be replaced. Replacement scalps are available as service parts.

2. Wipe inside of mirror frame clean.
3. To install replacement mirror faces, remove paper backing from mirror face and center mirror in mirror frame. Then press firmly to ensure adhesion of the mirror face to the mirror frame.

OUTSIDE REMOTE CONTROL MIRROR

The optional remote control mirror can be adjusted from the interior of the car by moving the remote control lever in the direction desired.

Remote Mirror Face Replacement - All Styles

1. To remove a scratched, broken, stained, etc., mirror face from the mirror frame, tape, then break the mirror glass and remove the broken glass and fiber pad from the mirror frame.

CAUTION: Protect painted surface on door assembly when breaking mirror face to remove from mirror frame.

Removal and Installation - "F, H (Less "07, 27") and "X" Styles - Left Side

1. Remove door trim assembly and peel inner panel water deflector back sufficiently to gain access to remote mirror cable. Then detach remote cable from retaining tabs on inner panel reinforcement (refer to Fig. 5-95).
2. Remove attaching screw in base of mirror and mounting bracket to door outer panel attaching screws (Fig. 5-92). Then remove mirror and cable assembly from door.
3. To install, reverse removal procedure.

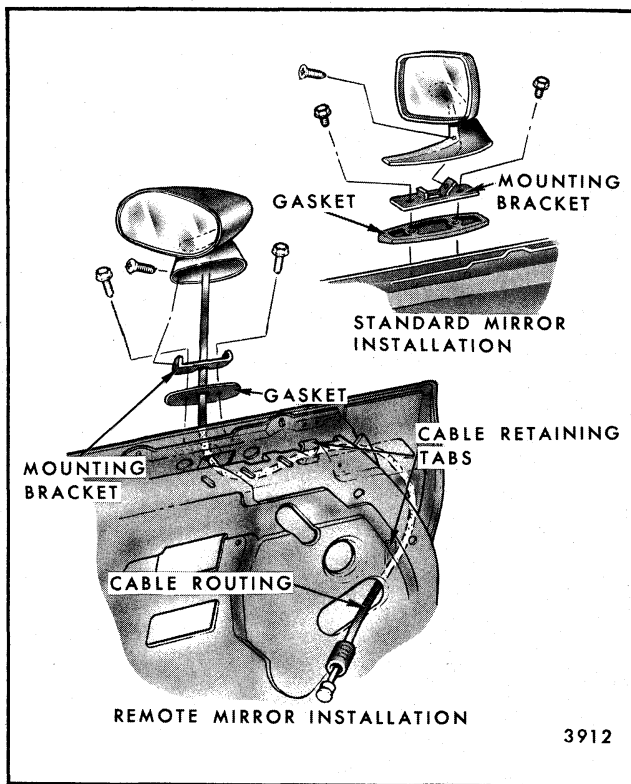


Fig. 5-95-Door Outside Remote Mirror Removal - "F, H and X" Styles - Left Side Only

Removal and Installation - "A, B, C, E and H-07, 27" Styles - Left Side

1. Remove door trim assembly ("H-07, 27" styles), or upper portion of door trim assembly ("A, B, C, E" Styles) as described in "Door Trim" portion of this section. Then detach remote cable from retaining tab on outer panel belt reinforcement (Fig. 5-96).
2. Remove mirror base to door outer panel stud nuts (Fig. 5-96) and remove mirror and cable assembly from door.
3. To install, reverse removal procedure.

Removal and Installation - "A, B, C and E" Styles - Right Side

1. Remove upper portion of door trim assembly as described in "Door Trim" portion of this section. Then detach remote cable from retaining tab in instrument panel as described in motor division service manual. Remove shroud side finishing panel.
2. Feed remote cable through shroud and rubber conduit between door and shroud.

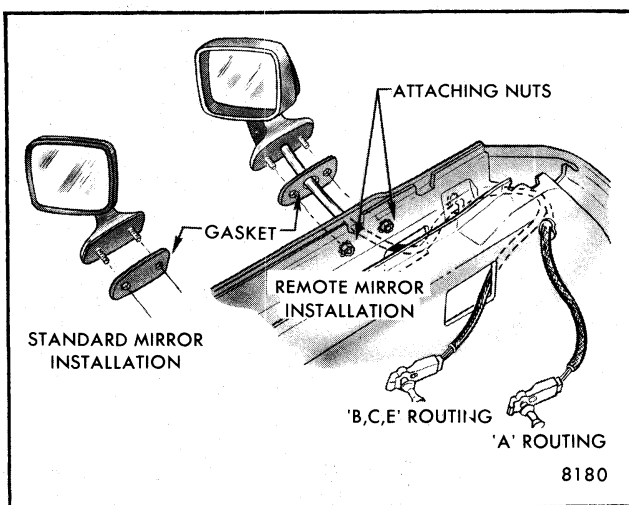


Fig. 5-96-Door Outside Mirror - Typical All "A, B, C, E and H-07-27" Styles - Left Side

3. Remove mirror base to door outer panel stud nuts similar to left hand side (Fig. 5-96) and remove mirror and cable assembly from door.
4. To install, reverse removal procedure. Operate mirror at remote end several times before installing instrument panels or body trim.

Removal and Installation - "F, H and X" Styles - Right Side

1. Remove door trim assembly and peel inner panel water deflector back sufficiently to gain access to remote mirror cable. Then detach remote cable from retaining tabs on inner panel reinforcement.
2. On "H" styles, disengage remote mirror control from mirror escutcheon.
3. Remove mirror base to door outer panel stud nuts (Fig. 5-97) and remove mirror and cable assembly from door.
4. On "F and X" styles, refer to Car Division Manual for removal of instrument pad to gain access to cable routing and removal.
5. To install, reverse removal procedure.

OUTSIDE STANDARD MIRROR

Removal and Installation - "F, H (Less "07, 27") and X" Styles

1. Remove attaching screw in base of mirror and remove mirror (Fig. 5-95).

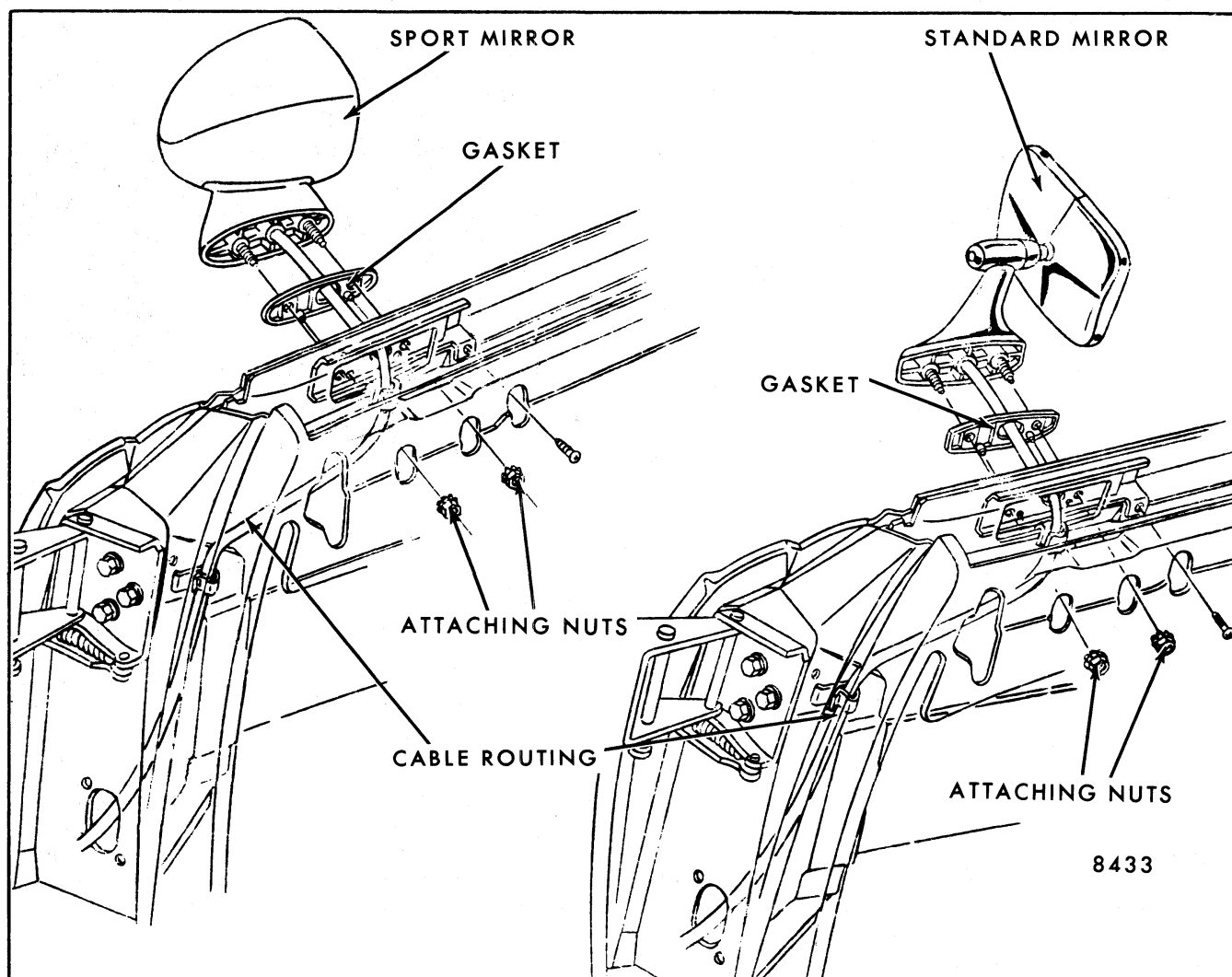


Fig. 5-97-Door Outside Mirror - Typical All "A, B, C, E, F, H and X" Styles - Right Side

2. To install, reverse removal procedure.

Removal and Installation - "A, B, C, E and H-07, 27" Styles

1. Remove upper portion of door trim assembly as described in "Door Trim" portion of this section.
2. Remove mirror base to door outer panel stud nuts (Fig. 5-96) and remove mirror from door.
3. To install, reverse removal procedure.

FRONT DOOR WINDOW ASSEMBLY - "A-29,35" Styles

The front door window assembly consists of a solid

tempered safety plate window with an individually bolted-on roller at the rear and an up-travel stop and glass stabilizer plate at the front. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

Figure 5-98 is an exploded view of the front door window assembly and identifies the various components and their assembly sequence.

NOTE: When installing glass attachments, torque nuts to 72 inch-pounds (6 foot-pounds). Also, when replacing door glass, replace glass spacers and washers ("6" and "7", Fig. 5-98).

Diagnosis and Adjustments

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can

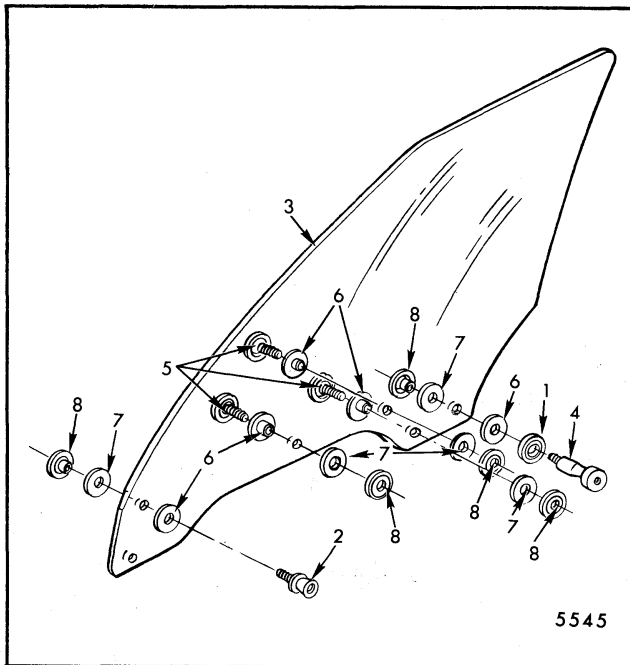


Fig. 5-98-Front Door Window Assembly - "A-29,35" Styles

- | | |
|-------------------|---------------------|
| 1. Washer (Metal) | 5. Bolt |
| 2. Up-Travel Stop | 6. Spacer |
| 3. Window Glass | 7. Washer (Plastic) |
| 4. Window Roller | 8. Nut |

be corrected by loosening the front and rear up-travel stops ("2" and "3", Fig. 5-99) and inner panel cam attaching screws ("8", Fig. 5-99) and raising or lowering front edge of glass in relation to roof rail, as required, to parallel upper edge of glass with side roof rail weatherstrip. Then tighten inner panel cam attaching screws and raise glass to desired height to establish proper contact with the side roof rail weatherstrip. Tighten up-travel stop screws. Torque attachment components to 60 to 90 inch-pounds.

2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE** - Loosen front and rear up-travel stops ("2" and "3", Fig. 5-99), belt trim support retainers ("1", Fig. 5-99) and stabilizer guide assembly ("7", Fig. 5-99). Loosen upper guide support attaching screws ("4", Fig. 5-99) and position guide further inboard or outboard as required. Outboard adjustment at this location moves the door window upper edge inboard. Conversely, inboard adjustment moves the top of the glass outboard. After making adjustment, torque previously loosened components to 60 to 90 inch-pounds. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.
3. **WINDOW TOO HIGH OR LOW IN UP POSITION** - To adjust window up-travel, loosen

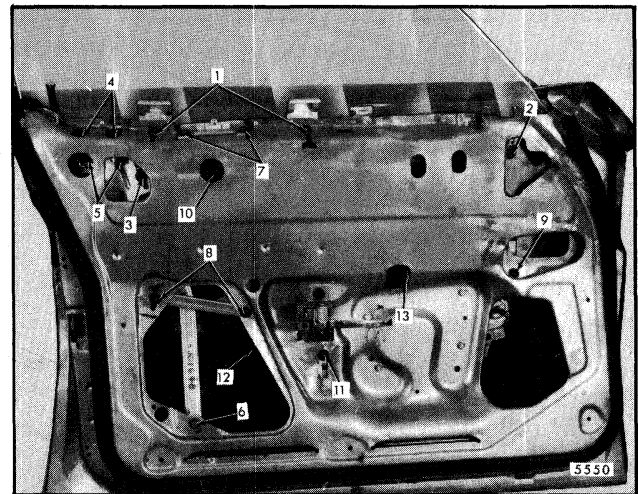


Fig. 5-99-Front Door Window Removal and Adjustments - "A-29,35" Styles

- | | |
|--|---|
| 1. Belt Trim Support Retainer Attaching Screws | 8. Inner Panel Cam Attaching Screws |
| 2. Front Up-Travel Stop Attaching Screw | 9. Glass Stabilizer Plate Attaching Screws |
| 3. Rear Up-Travel Stop Attaching Screw | 10. Lower Sash Channel Cam to Glass Center Attaching Nut Access |
| 4. Rear Guide Upper Bracket Attaching Screws | 11. Down-Travel Support Attaching Screw |
| 5. Rear Guide Upper Attaching Screws | 12. Lower Sash Channel Cam to Glass Rear Attaching Nut Access |
| 6. Rear Guide Lower Attaching Screw | 13. Lower Sash Channel Cam to Glass Front Attaching Nut Access |
| 7. Stabilizer Guide Assembly (On Inner Panel) Attaching Screws | |

front and rear up-travel stops ("2" and "3", Fig. 5-99) and operate window to desired up position to establish proper contact with the side roof rail weatherstrip. Torque attachments to 60 to 90 inch-pounds.

4. **WINDOW MECHANISM BINDS WHEN OPERATING** - Ease of window operation and glass stability depends on the adjustment of the belt trim support retainers ("1", Fig. 5-99). A binding door glass can be relieved by adjusting the belt trim support retainers outboard until they lightly contact the door window glass. Torque belt trim support retainer attachments to 60 to 90 inch-pounds.
5. **WINDOW TOO FAR FORWARD OR REARWARD (NOT CENTERED IN WINDOW OPENING)** - Loosen rear guide upper attaching screws ("5", Fig. 5-99) and move glass forward or rearward until centered. Torque attachments to 60 to 90 inch-pounds.

6. **WINDOW TOO HIGH OR LOW IN DOWN POSITION** - Loosen down-travel support attaching screw ("11", Fig. 5-99) and lower or raise window to be flush with door outer belt sealing strip. Raise down-travel support into contact with window lower sash channel cam and torque attaching screw to 60 to 90 inch-pounds.

NOTE: After any adjustment has been performed all previously loosened hardware attachments must be torqued to 60 to 90 inch-pounds.

Glass Alignment Using Gauge Blocks - "A-29,35" Styles

To consistently locate the window glass to its specified alignment, glass alignment gauge blocks (tools J-24350-1 and J-24792 or equivalent) have been released for service use.

The following procedure outlines proper use of glass alignment gauge block tools J-24350-1 and J-24792 (or equivalent) as shown in Figure 5-100.

1. Remove upper and lower sections of door trim assembly and inner panel water deflector as described in "Front and Rear Doors" and "Door Trim" portions of this section.
2. Detach side roof rail weatherstrip plastic fasteners at lower front and rear corners and carefully remove weatherstrip from retainer.
3. Lower front door glass and install gauge blocks, tool J-24792 (brown) or equivalent, into side roof rail weatherstrip retainer above and in from upper front and rear corners of glass as shown in Figure 5-101. Install glass suction cups on interior surface of glass (Fig. 5-101) to enable adjuster to shift glass when making adjustment with door in a closed position.

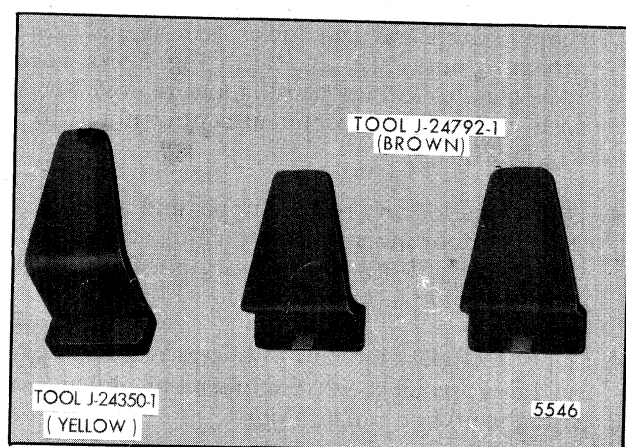


Fig. 5-100-Glass Alignment Gauge Blocks - Tools J-24350-1 and J-24792 or Equivalent (Set of Three Blocks)

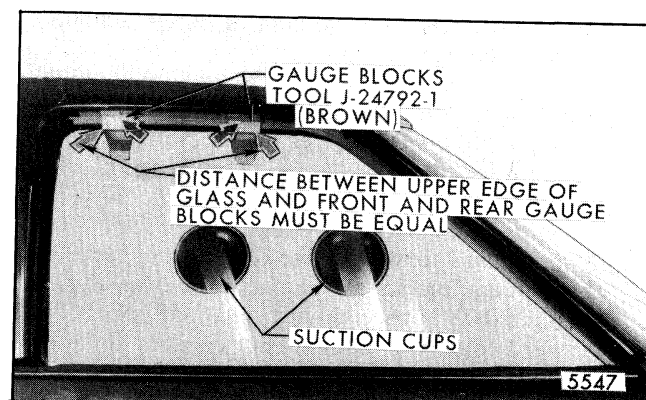


Fig. 5-101-Front Door Window - Rotated ("Cocked") Glass Alignment - "A" Styles

NOTE: When installing gauge blocks (brown) or equivalent into upper retainer, handle portion of blocks must protrude inboard (Fig. 5-101). Also, grooves on sides of blocks must be fully engaged with side roof rail weatherstrip retainer.

4. Working from inside of body with door in a closed position, loosen front and rear up-travel stops ("2" and "3", Fig. 5-99), belt trim support retainers ("1", Fig. 5-99), front door window stabilizer guide assembly ("7", Fig. 5-99).
5. Raise door window to approximately one inch from full-up position as shown in Figure 5-101. If spacing between upper edge of glass and front and rear gauge blocks is equal (refer to Fig. 5-101), proceed with next step. If spacing is unequal, loosen inner panel cam attaching screws ("8", Fig. 5-99) and adjust as necessary. When proper adjustment is made, tighten attaching screws.
6. Lower glass and install gauge block, tool J-23450-1 (yellow) or equivalent, into the windshield pillar retainer slightly above beltline (Fig. 5-102). Make certain handle portion of block is

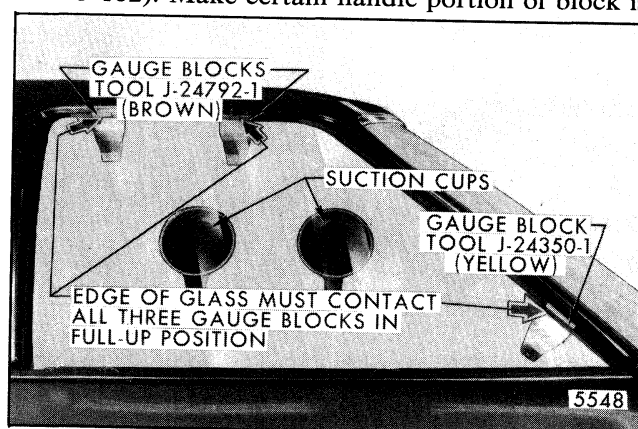


Fig. 5-102-Front Door Window - Fore and Aft Alignment - "A" Styles

inboard and grooves on side of block are fully engaged with retainer.

Raise door window assembly until contact is established between upper and forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contacts all three gauge blocks at the same time (as shown in Fig. 5-102), proceed with step 7. If upper and forward edge of glass does not contact all three gauge blocks simultaneously, loosen fore and aft adjustment of rear guide assembly ("5", Fig. 5-99) and position glass forward or rearward until edge of glass contacts all three gauge blocks in full-up position. Re-tighten rear guide attaching screws ("5", Fig. 5-99).

7. Completely loosen front door window upper guide support attaching screws ("4", Fig. 5-99). Apply firm outboard pressure against guide support at attaching screw location to remove slack in system and to hold upper inner edge of glass inboard against outer edge of tab on gauge block. Tighten attaching screws of upper guide support (Fig. 5-103).
8. With glass in full-up position against gauge blocks, perform the following adjustments in the following order:
 - a. Move belt trim support retainer assemblies ("1", Fig. 5-99) outboard until they lightly contact door glass, then tighten.
 - b. Lower front and rear up-stops ("2" and "3", Fig. 5-99) down into contact with door glass stops and tighten.
 - c. Position front door window stabilizer guide assembly (on inner panel) "7", Figure 5-99 and tighten.

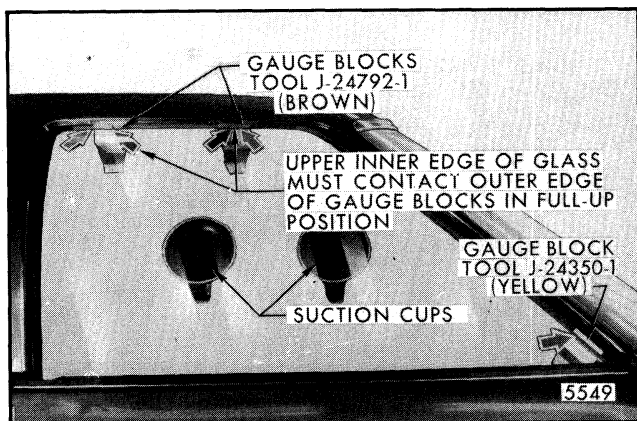


Fig. 5-103-Front Door Window - In and Out and Up-Travel Alignment - "A" Styles

9. Lower door glass full down to make sure top edge of door glass is flush with door inner and outer belt sealing strips. If window is too high or low in relation to beltline, loosen down-travel support attaching screw ("11", Fig. 5-99) and properly flush top edge of glass. Raise down-travel stop into contact with window regulator sash cam and re-tighten down-stop attaching bolt.
10. After all adjustments have been performed, torque all previously loosened hardware attaching nuts and screws to 60 to 90 inch-pounds.
11. Remove gauge blocks from weatherstrip retainer and reinstall and seal weatherstrip with a pumpable sealer. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.
12. Reinstall previously removed trim and water deflector.

Removal and Installation - "A-29, 35" styles

1. Remove upper and lower portion of door trim assembly and inner panel water deflector, as previously described.
2. Mark location of attaching screws, and remove the following components:
 - a. Front and rear belt trim support retainers ("1", Figure 5-99).
 - b. Front and rear up-travel stops ("2" and "3", Figure 5-99).
 - c. Stabilizer guide assembly on inner panel ("7", Figure 5-99).
3. Operate window to a one-half up position and remove front and rear lower sash channel cam attaching nuts ("12" and "13", Fig. 5-99). Then raise glass to full-up position and remove lower sash channel cam center attaching nut ("10", Fig. 5-99).
4. Mark location and remove upper and lower rear guide to door inner panel attaching screws ("4" and "6", Fig. 5-99). Disengage guide from roller and lay guide in bottom of door.
5. Tip top of glass inboard until rear roller is clear of inner panel belt reinforcement, lift glass straight up and out of door.
6. To install, reverse removal procedure. Install previously removed attachments to the marked

locations for proper glass alignment. Make sure that when the glass is cycled, it does not contact the blow-out clip.

7. Torque glass to lower sash cam attaching nuts to 72 inch pounds. Torque all other previously removed attachments to 60 to 90 inch-pounds.

DOOR WINDOW ASSEMBLY - "A-37, 57, 80" Styles

The front door window assembly consists of a solid tempered safety plate glass window with individually bolted-on stabilizer at the rear, roller in the center and up-travel stop and stabilizer plate at the front. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

Figure 5-104 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

NOTE: When installing glass attachments, torque nuts to 72 inch pounds (6 foot pounds). Also, when replacing door glass, replace glass spacers and washers ("6" and "7", Fig. 5-104).

Diagnosis and Adjustments

1. WINDOW NOT PARALLEL WITH SIDE

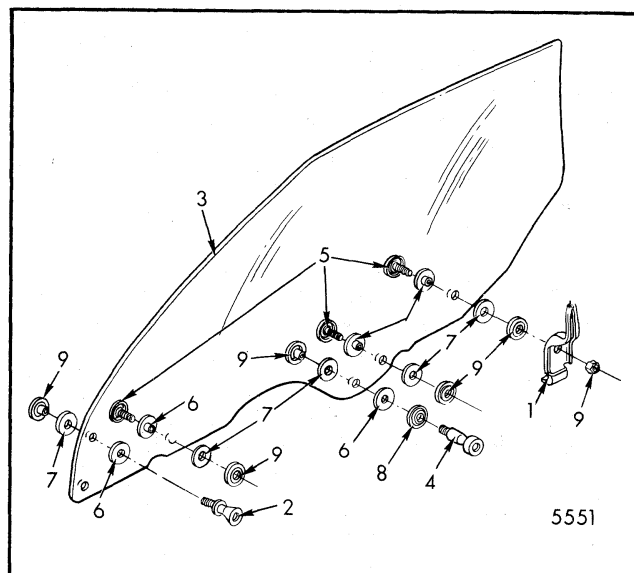


Fig. 5-104-Front Door Window Assembly "A-37, 57 and 80" Styles

- | | |
|--------------------------------|---------------------|
| 1. Glass Stabilizer (on Glass) | 5. Bolt |
| 2. Up-Travel Stop | 6. Spacer |
| 3. Window Glass | 7. Washer (Plastic) |
| 4. Window Roller | 8. Washer (Metal) |
| | 9. Nut |

ROOF RAIL WEATHERSTRIP - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("2" and "3", Fig. 5-105) and inner panel cam attaching screws ("8", Fig. 5-105) and raising or lowering front edge of glass in relation to rear edge of glass as required to parallel upper edge of glass with side roof rail weatherstrip. Then tighten inner panel cam attaching screws and raise glass to desired height to establish proper contact with side roof rail weatherstrip. Tighten up-travel stop screws. Torque previously loosened components to 60 to 90 inch-pounds.

2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE** - Loosen front and rear up-travel stops ("2" and "3", Fig. 5-105), belt trim support retainers ("1", Fig. 5-105) and stabilizer guide assembly ("7", Fig. 5-105). Loosen rear guide upper bracket attaching screws ("4", Fig. 5-105) and position guide in-board or outboard as required. After making adjustment torque previously loosened components to 60 to 90 inch-pounds. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.

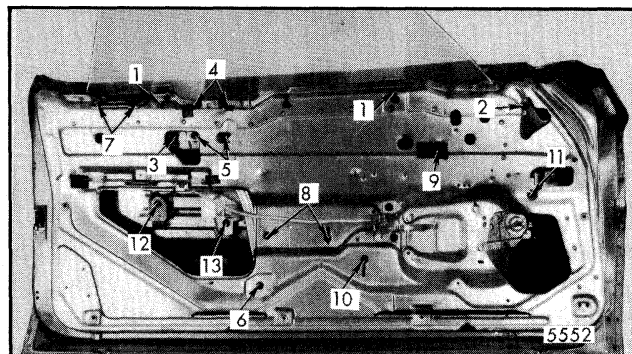


Fig. 5-105-Door Window Removal and Adjustment - "A-37, 57 and 80" Styles

- | | |
|---|---|
| 1. Belt Trim Support Retainer Attaching Screws | 8. Inner Panel Cam Attaching Screws |
| 2. Front Up-Travel Stop Attaching Screw | 9. Lower Sash Channel Cam to Glass Front Attaching Nut Access |
| 3. Rear Up-Travel Stop Attaching Screw | 10. Down-Travel Support Attaching Screw |
| 4. Rear Guide Upper Bracket Attaching Screws | 11. Glass Stabilizer Plate (on Reinforcement) Attaching Screw |
| 5. Rear Guide Upper Attaching Screws | 12. Lower Sash Channel Cam and Stabilizer Guide to Glass Rear Attaching Nut |
| 6. Rear Guide Lower Attaching Screw | 13. Lower Sash Channel Cam to Glass Center Attaching Nut |
| 7. Stabilizer Guide (on Inner Panel) Attaching Screws | |

3. **WINDOW TOO HIGH OR LOW IN UP POSITION** - Loosen front and rear up-travel stops ("2" and "3", Fig. 5-105) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Torque up-travel stop screws to 60 to 90 inch-pounds.
4. **WINDOW TOO HIGH OR LOW IN DOWN POSITION** - Loosen window down-travel support ("10", Fig. 5-105) and lower or raise window to be flush with door outer belt sealing strip. Then position support against lower sash channel cam and torque support attaching screw to 60 to 90 inch-pounds.
5. **WINDOW TOO FAR FORWARD OR REARWARD (NOT CENTERED IN WINDOW OPENING)** - Loosen rear guide upper attaching screws ("5", Fig. 5-105) and reposition glass as necessary. Torque guide attaching screws to 60 to 90 inch-pounds.
6. **WINDOW MECHANISM BINDS WHEN OPERATING** - Ease of window operation and window stability depend to a great extent on the adjustment of the window belt trim support retainers at the beltline ("1", Fig. 5-105). A binding door glass can be corrected by adjusting the belt trim support retainers outboard until they lightly contact the window.

NOTE: After any adjustment has been performed, all previously loosened hardware attachments must be torqued to 60 to 90 inch-pounds.

Glass Alignment Using Gauge Blocks - "A-37, 57, and 80" Styles

To consistently locate the window glass to its specified alignment, glass alignment gauge blocks, tools J-24792 and J-24350-1 (or equivalent) have been released for service use.

For proper use of gauge blocks (Fig. 5-100) refer to the following procedure:

1. Remove upper and lower portion of door trim assembly and inner panel water deflector as previously described.
2. Remove plastic fasteners, detach side roof rail weatherstrip at lower front and rear corners and carefully remove from retainer.
3. Lower front door window and install gauge blocks, tool J-24792 (brown) or equivalent into side roof rail weatherstrip retainer above and in from upper front and rear corners of glass as shown in Figure 5-101. Install glass suction cups

on interior surface of glass (Fig. 5-101) to enable adjuster to shift glass when making adjustments with door in a closed position.

NOTE: When installing gauge blocks into retainer, handle portion of blocks must protrude inboard (Fig. 5-101). Also, grooves on sides of gauge blocks must be fully engaged with side roof rail weatherstrip retainer.

4. Working from inside body, with door in closed position, loosen the following attachments:
 - a. Front and rear up-travel stops ("2" and "3", Fig. 5-105).
 - b. Belt trim support retainers ("1" of Fig. 5-105).
 - c. Front door stabilizer guide assembly (on inner panel), Item "7" of Figure 5-105.
 5. Raise door window assembly to approximately one inch from full-up position as shown in Figure 5-101. If spacing between upper edge of glass and front and rear gauge blocks is equal, as shown in Figure 5-101, proceed with next step. If spacing is unequal, loosen inner panel cam attaching screws ("8", Fig. 5-101) and adjust to equalize spacing. When adjustment is correct, tighten attaching screws.
 6. Lower glass and install gauge block, tool J-23450-1 (yellow) or equivalent, into the windshield pillar retainer slightly above beltline (Fig. 5-102). Make certain handle portion of block is inboard and grooves on side of block are fully engaged with retainer. Raise door window assembly until contact is made between upper and forward edge of glass and one or more of the three gauge blocks.
- If upper and forward edge of glass contacts all three gauge blocks at the same time (as shown in Fig. 5-102), proceed with step 7. If, however, upper and forward edge of glass does not contact all three blocks simultaneously, completely loosen fore and aft adjustment of rear guide upper attaching screws ("5", Fig. 5-105) and position glass forward or rearward until edge of glass contacts all three gauge blocks in full-up position. Retighten guide assembly attaching screws ("5", Fig. 5-105).
7. Completely loosen rear guide upper bracket attaching screws ("4", Fig. 5-105). Apply firm outboard pressure against guide at attaching screw location to remove slack in system and to hold inner edge of glass against outer edge of tab on gauge block (Fig. 5-103). Tighten attaching screws of upper guide bracket.

8. With glass in full-up position nested in gauge blocks, perform the listed adjustments in the following order:
 - a. Move front and rear belt trim support retainers ("1", Fig. 5-105) outboard until they lightly contact door glass, then tighten.
 - b. Lower front and rear up-travel stops ("2" and "3", Figure 5-105) until they firmly contact door glass stops and tighten.
 - c. Position front door stabilizer guide ("7", Figure 5-105) and tighten.
9. Lower door glass full-down to make sure top edge of door glass is flush with door inner and outer belt sealing strips. If window is too high or low in relation to beltline, loosen down-travel support attaching screw ("10", Fig. 5-105) and properly flush top edge of glass. Raise down-travel stop into contact with front door window lower sash channel cam and re-tighten down stop attaching screw.
10. After all adjustments have been performed, torque all previously loosened hardware attachment components to 60 to 90 inch-pounds.
11. Remove gauge blocks from weatherstrip retainer, reinstall and seal weatherstrip with a pumpable sealer. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.
12. Install previously removed trim and water deflector.

Removal and Installation - "A-37, 57, 80" Styles

1. Remove upper and lower door trim assembly and inner panel water deflector.
2. With glass in a half-raised position, remove front and rear up-travel stops ("2" and "3", Fig. 5-105), front and rear belt trim support retainers ("1", Fig. 5-105) and stabilizer guide assembly on inner panel and door glass ("7" and "12", Fig. 5-105).
3. Remove lower sash channel cam to glass center attaching nut ("13", Fig. 5-105).
4. Remove rear guide upper bracket ("4", Fig. 5-105) and lower guide ("6", Fig. 5-105) attaching screws, disengage guide from roller, and lay guide in bottom of door.
5. Remove lower sash channel cam to glass front attaching nut ("9", Fig. 5-105).
6. Separate glass from lower sash channel cam. While holding glass securely, lower sash channel cam to clear up-stop and stabilizer (on glass).
7. Tip top of glass inboard until rear roller is clear of inner belt reinforcement, then lift glass straight out of door.
8. To install, reverse removal procedure. Adjust window for proper alignment and operation as previously described. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.
9. Torque all previously loosened or removed attaching nuts to 72 inch-pounds. Torque all attaching screws to 60 to 90 inch-pounds.

FRONT DOOR WINDOW ASSEMBLY - "B-35, 45, 69" Styles

The front door window assembly consists of a solid tempered safety plate glass window and an individually bolted-on roller at the rear. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

NOTE: When installing glass attachments, torque nuts to 72 inch pounds (6 foot pounds). Also, when replacing door glass, replace glass spacers.

Diagnosis and Adjustment

1. **WINDOW NOT PARALLEL ALONG UPPER EDGE WITH DOOR UPPER FRAME** - A rotated window condition (glass cocked in opening) can be corrected by loosening inner panel cam attaching screws ("6", Fig. 5-106) and raising or lowering front edge of glass in relation to rear edge of glass, as required. Torque inner panel cam attaching screws to 60 to 90 inch-pounds.
2. **WINDOW TOO HIGH OR TOO LOW IN DOWN POSITION** - Loosen window down-travel bumper support ("7", Fig. 5-106) and raise or lower window to desired full-down glass height. Then, position bumper support against lower edge of glass and tighten attaching screws to 60 to 90 inch-pounds.
3. **WINDOW MECHANISM BINDS WHEN OPERATING** - The rear guide is adjustable in and out ("3", Fig. 5-106) and fore and aft ("4", Fig. 5-106) to relieve a binding door window assembly. In addition, excessive outboard adjustment of the belt trim support retainers ("1", Fig. 5-106) may result in a binding window. The

belt trim support retainers should be adjusted until they lightly contact the door window.

NOTE: After any adjustment has been performed, all previously loosened hardware attachments must be torqued to 60 to 90 inch-pounds.

Removal and Installation

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Loosen window belt trim support retainers ("1", Fig. 5-106).
3. Operate window to a three-quarter-down position and remove window lower sash channel cam to glass attaching stud nuts ("2", Fig. 5-106). Tilt front edge of glass downward and remove window inboard of door upper frame.

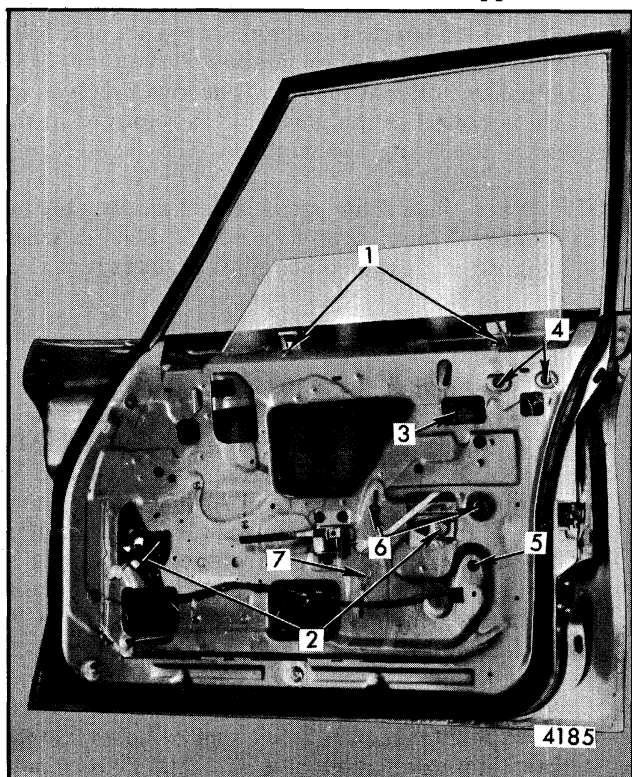


Fig. 5-106-Window Removal and Adjustment - "B-35, 45, 69" Styles

- | | |
|---|--------------------------------------|
| 1. Belt Trim Support Retainers | 5. Rear Guide Lower Screws |
| 2. Lower Sash Channel Cam Attaching Stud Nut Access Holes | 6. Inner Panel Cam Screws |
| 3. Rear Guide to Guide Bracket Screw | 7. Down-Travel Support Bracket Screw |
| 4. Rear Guide Bracket to Inner Panel Screws | |

4. To install, reverse removal procedure. Adjust glass for proper alignment and operation. Torque lower sash channel cam attaching nuts to 72 inch-pounds.

DOOR WINDOW ASSEMBLY - "B, C and E" Two-Door Styles

The front door window assembly consists of a solid tempered safety plate glass window, with a bolted-on lower sash guide plate assembly, which operates on a single vertical guide tube located in the center of the door.

Figure 5-107 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

NOTE: When installing glass attachments, torque nuts to 72 inch-pounds (6 foot-pounds). Also, when replacing door glass, replace glass spacers and washer.

Diagnosis and Adjustments

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("3" and "4", Fig. 5-108) and lower sash upper guide attaching nuts ("7", (Fig. 5-108) and raising or lowering front edge of glass in relation to rear edge of glass as required. Then, torque lower sash upper guide attaching nuts to

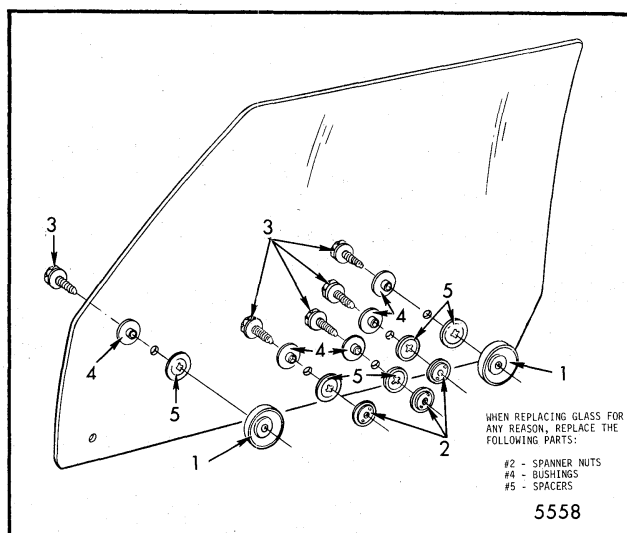


Fig. 5-107-Door Window Assembly - "B, C and E" Two-Door Styles

- | | |
|-------------------------------|-----------|
| 1. Stop, Up-Travel (On Glass) | 3. Bolt |
| 2. Nut | 4. Spacer |
| | 5. Washer |

72 inch-pounds and raise glass to desired height to establish proper contact with side roof rail weatherstrip. Position up-travel stops to contact stops on glass and torque attachments to 60 to 90 inch-pounds.

2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE** - Remove guide pin stabilizer ("11", Fig. 5-108). Loosen lower sash lower guide screws ("8", Fig. 5-108) and front and rear belt trim support retainer screws ("5", Fig. 5-108) and position guide inboard or outboard as required. Outboard adjustment of the guide moves upper edge of glass inboard. Conversely, inboard adjustment moves the upper edge of glass outboard. With glass in a full-up position, position trim support retainers against inner surface of glass and tighten attaching screws. Reinstall guide pin stabilizer through guide support. Adjust pin inboard to gain firm contact with guide support, then reinstall and tighten attaching screws. Torque all previously loosened attaching screws to 60 to 90 inch-pounds. Make sure that the glass, when cycled, does not come in contact with the blow-out clip.
3. **WINDOW TOO HIGH OR LOW IN UP POSITION** - Loosen front and rear up-travel stops ("3" and "4", Fig. 5-108) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Torque up-travel stop screws to 60 to 90 inch-pounds.
4. **WINDOW TOO HIGH OR LOW IN DOWN POSITION** - Loosen front and rear down-travel supports ("1" and "2", Fig. 5-108) and lower or raise window to desired full-down glass height. Then position front and rear down-travel supports against lower edge of glass and torque attaching screws to 60 to 90 inch-pounds.
5. **WINDOW TOO FAR FORWARD OR REARWARD** - Loosen lower sash guide plate nuts ("6", Fig. 5-108) and reposition glass as necessary. Torque lower sash guide plate attaching nuts to 72 inch-pounds.
6. **WINDOW MECHANISM BINDS WHEN OPERATING** - Ease of window operation and window stability depend to a great extent on the adjustment of the belt trim support retainers ("5", Fig. 5-108) and the guide pin stabilizer ("11", Fig. 5-108). The belt trim support retainers ("5" Fig. 5-108) should contact the glass throughout the full cycle of the window. Due to slight variations in glass contour, however, in some cases the strip may lose contact with the glass halfway through the cycle. This is permissible provided it does not result in loose glass.

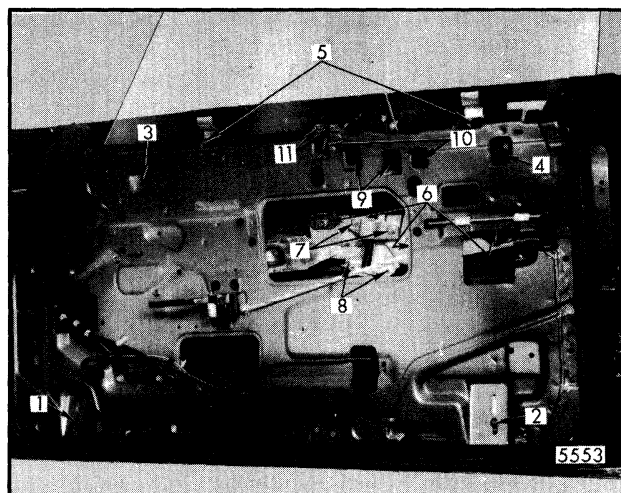


Fig. 5-108-Door Window Removal and Adjustment - "B, C and E" Two-Door Styles

- | | |
|--------------------------------------|---|
| 1. Front Down-Travel Support Bracket | 8. Lower Sash Lower Guide Screws |
| 2. Rear Down-Travel Support Bracket | 9. Lower Sash Upper Guide Adjustment Access Hole (Rotated Glass Adjustment) |
| 3. Front Up-Travel Stop | 10. Lower Sash Guide Plate Adjustment Access Hole (Fore and Aft Adjustment) |
| 4. Rear Up-Travel Stop | 11. Guide Pin Stabilizer Attaching Screws |
| 5. Belt Trim Support Retainers | |
| 6. Lower Sash Guide Plate Nuts | |
| 7. Lower Sash Upper Guide Nuts | |

Contact should be sufficient to stabilize glass, but not restrict ease of window operation. After previous adjustments have been performed, adjust the guide pin stabilizer "11" into contact with the guide support and tighten attaching screws. Torque all previously loosened attachment components to 60 to 90 inch-pounds.

Glass Alignment Using Gauge Blocks - "B, C and E" Two-Door Styles

The "B, C and E" two-door styles feature a hardware system with a single vertical guide tube in the center of the door. Most window adjustments are made from a guide plate attached to the lower edge of the glass (Fig. 5-109). Fine adjustment of this glass is more sensitive than conventional styles utilizing front and rear guides, as relatively small movements at adjusting locations will result in large movements at the upper edge of glass.

To facilitate adjustment of this glass, use glass alignment gauge blocks tool J-23711 or equivalent (Fig. 5-110). For proper use of gauge blocks, refer to the following procedure:

1. Remove upper portion of door trim assembly.

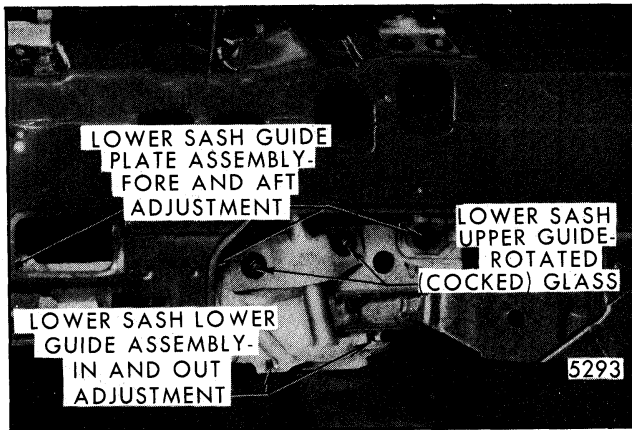


Fig. 5-109-Door Window Adjustment ("B, C and E" Two-Door Styles)

(Refer to "Door Trim" portion of this section for door trim assembly removal).

2. Detach side roof rail weatherstrip at lower front corner and carefully remove from retainer over the door window.
 3. Lower front door and rear quarter windows and install gauge blocks, tool J-23711-2 (black) or equivalent into side roof rail weatherstrip retainer above upper front and rear corners of the glass as shown in Figure 5-112. Then, install gauge block, tool J- 12711-1 (grey), or equivalent into windshield pillar retainer slightly above beltline.
- NOTE:** The grooves on sides of the gauge blocks must be fully engaged with side roof rail weatherstrip retainer.
4. Working from inside body, with door in the closed position remove front door guide pin stabilizer attaching screws and remove pin stabil-

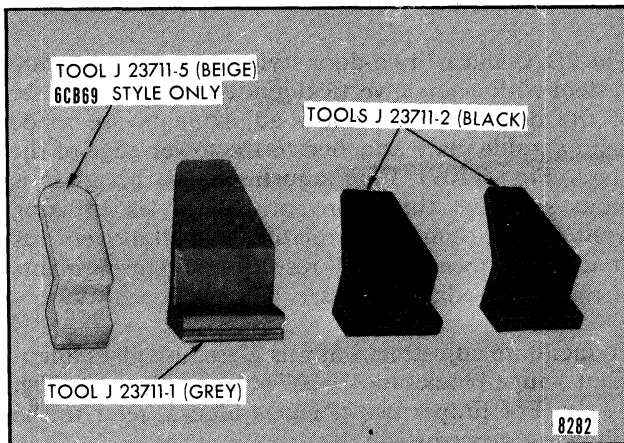


Fig. 5-110-Glass Alignment Gauge Blocks - Tool J-23711 or Equivalent (Set of Four Blocks) - "B, C and E" Styles

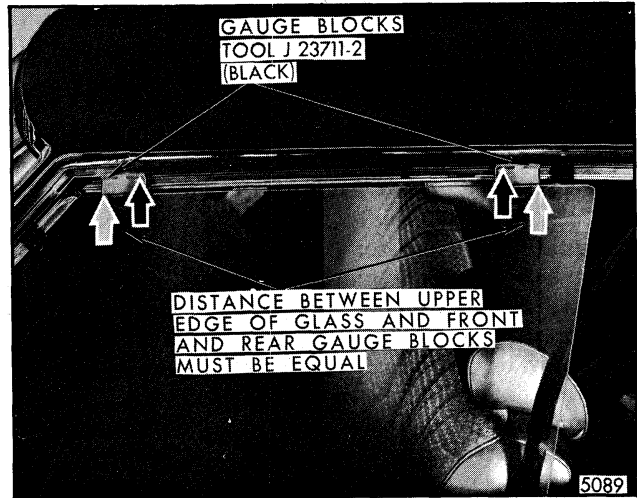


Fig. 5-111 Door Window-Rotated ("Cocked") Glass Alignment - "B, C and E" Styles

izer ("11", Fig. 5-108). Loosen front and rear up-travel stops ("3" and "4", Fig. 5-108) and belt trim support retainers ("5" Fig. 5-108).

5. With glass in partially-down position loosen rear stationary up-travel stop on glass ("1", Fig. 5-107). Then, raise door window assembly to approximately 1" from the full-up position, as illustrated in Figure 5-111. If distance (space) between the upper edge of glass and the front and rear gauge blocks is equal (as shown in Fig. 5-111), proceed with step 6. If distance (space) between the upper edge of the glass and both upper gauge blocks is not equal, loosen lower sash upper guide attaching nuts ("7", Fig. 5-108) through access holes ("9", Fig. 5-108) and adjust glass as necessary.

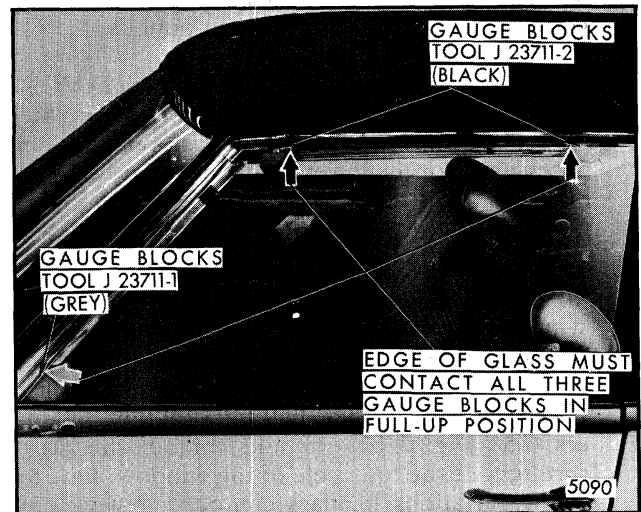


Fig. 5-112-Door Window - Fore and Aft Alignment - "B, C and E" Styles

6. Raise front door window assembly until contact is established between the upper and forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contacts all three gauge blocks simultaneously (as shown in Fig. 5-112), proceed with step 7. If upper and forward edge of glass does not contact all three gauge blocks simultaneously, loosen fore and aft adjustment on lower sash guide plate ("6", Fig. 5-108) through access holes ("10", Fig. 5-108) and move glass forward or rearward until the edge of glass contacts all three gauge blocks in the full-up position.

7. Completely loosen lower sash lower guide assembly ("8", Fig. 5-108). Apply firm outboard pressure against upper end of front guide to remove slack in system and to hold upper inner edge of glass inboard against the outer edge of the gauge blocks, as shown in Figure 5-113. Then tighten lower sash lower guide assembly attaching screws.

NOTE: Inner surface of glass must contact outer surface of two upper blocks during this adjustment.

8. With glass in full-up position against upper gauge blocks, tighten up-travel stops ("3" and "4", Fig. 5-108) and adjust belt trim support retainers ("5", Fig. 5-108) outboard for a light tension against glass. Reinstall front door guide pin stabilizer through stabilizer guide support. Adjust pin inboard to gain firm contact with guide support, then reinstall and tighten attaching screws.

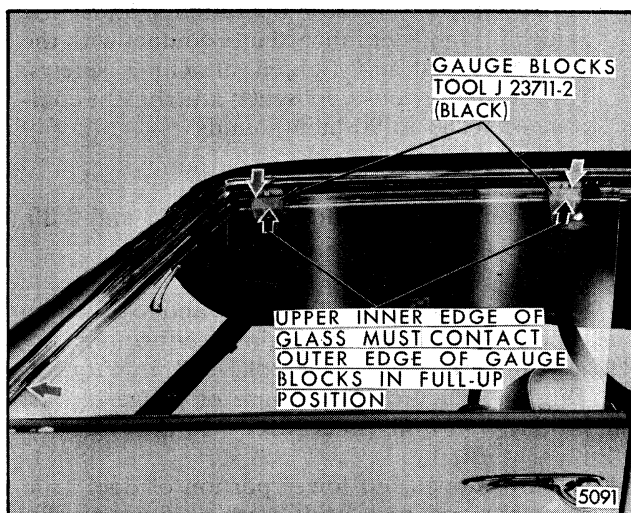


Fig. 5-113-Door Window - In and Out and Up-Travel Alignment - "B, C and E" Styles

9. Lower window and remove gauge blocks from weatherstrip retainer. Then, tighten rear stationary up-travel stop on glass ("1", Fig. 5-107) and reinstall and seal weatherstrip as previously described. Make sure that when the glass is cycled, it does not contact the blow-out clip.
10. After all adjustments have been performed, torque all previously loosened hardware attaching nuts to 72 inch-pounds, and attaching screws to 60 to 90 inch-pounds.
11. Install previously removed trim and water deflector.

Removal and Installation - "B, C, E" Two-Door Styles

1. Remove upper portion of door trim assembly.
2. Remove front and rear up-travel stops ("3" and "4", Fig. 5-108), belt trim support retainers ("5", Fig. 5-108) and window guide pin stabilizer ("11", Fig. 5-108).
3. Remove lower sash guide plate assembly to glass attaching nuts ("6", Fig. 5-108). Tilt upper edge of glass inboard to disengage glass from guide plate, then remove the window from the door by lifting straight up.
4. To install, reverse removal procedure. Adjust window for proper alignment and operation as described previously. Torque hardware attaching screws to 60 to 90 inch-pounds and attaching nuts to 72 inch-pounds. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.

FRONT DOOR WINDOW ASSEMBLY - "B and C-39, 49" and "C-69" Styles

The front door window assembly consists of a solid tempered safety plate glass window and an individually bolted-on roller at the rear, a roller assembly (bellcrank) at the front and a stabilizer guide support at the center. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

Figure 5-114 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

NOTE: When installing glass attachments, torque nuts to 72 inch-pounds (6 foot-pounds). Also, when replacing door glass, replace glass spacers and washers ("3" and "5", Fig. 5-114).

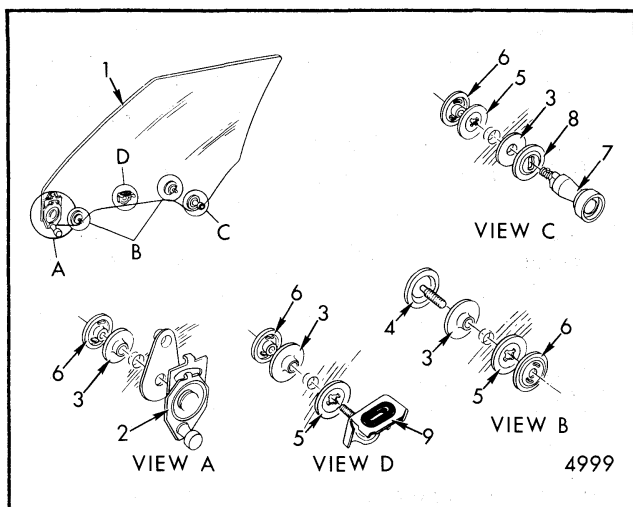


Fig. 5-114-Front Door Window Assembly - "B and C-39, 49" and "C-69" Styles

- | | |
|---------------------------------|---------------------------------|
| 1. Window Assembly | 5. Washer (Plastic) |
| 2. Roller Assembly (Bell Crank) | 6. Nut |
| 3. Spacer | 7. Window Roller |
| 4. Inner Panel Cam Screw | 8. Washer (Metal) |
| | 9. Guide Pin Stabilizer Support |

Diagnosis and Adjustment

- WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("1" and "2", Fig. 5-115) and inner panel cam screws ("8", Fig. 5-115) and raising or lowering front edge of glass in relation to rear edge of glass as required. Torque inner panel cam attaching screws to 60 to 90 inch-pounds and raise glass to desired height to establish proper contact with side roof rail weatherstrip. Position up-travel stops and torque up-travel stop bolts to 60 to 90 inch-pounds.
- WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE** - Loosen upper ends of front and rear guides ("6" and "7", Fig. 5-115) and belt trim support retainers ("3", Fig. 5-115) and remove guide pin stabilizer ("10", Fig. 5-115). Position guide inboard or outboard as required. Outboard adjustment of the guide assembly moves the upper edge of the glass inboard. Conversely, inboard adjustment moves the upper edge of the glass outboard. With glass in a full-up position, position trim support retainers against inner surface of glass and tighten attaching screws. Reinstall guide pin stabilizer inboard to gain firm contact with guide support. Torque all previously loosened hardware attachments to 60 to 90 inch-pounds.

Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.

- WINDOW TOO HIGH OR LOW IN UP POSITION** - To adjust window up-travel, loosen front and rear up-travel stops ("1" and "2", Fig. 5-115) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Torque up-travel stop screws to 60 to 90 inch-pounds.
- WINDOW TOO HIGH OR LOW IN DOWN POSITION** - Loosen down-travel support ("9", Fig. 5-115) and lower or raise window to desired full-down glass height. Then position support against lower edge of glass and torque attaching screws to 60 to 90 inch-pounds.
- WINDOW TOO FAR FORWARD OR REARWARD** - Loosen upper end of rear guide ("5", Fig. 5-115) and reposition glass as necessary. Because the roller assembly (bellcrank) which attaches to the glass at the front pivots, the front guide does not have to be adjusted during fore and aft window alignment. Torque rear guide upper attachments to 60 to 90 inch-pounds.
- WINDOW MECHANISM BINDS WHEN OPERATING** - Ease of window operation and window stability depends a great extent on adjustment of belt trim support retainers at beltline ("3", Fig. 5-115) and guide pin stabilizer ("10", Fig. 5-115). The trim support retainers should contact glass throughout full cycle of window. However, in some cases due to slight variations in glass contour, the strip may lose contact with glass halfway through the cycle. This is permissible provided it does not result in loose glass or restrict ease of window operation. Adjust the guide pin stabilizer inboard into contact with the guide support and tighten attaching screws. Torque all previously loosened attachment components to 60 to 90 inch-pounds.

Glass Alignment Using Gauge Blocks - "B and C-39, 49" and "C-69" Styles

To facilitate adjustment of this glass, and to maintain consistent glass alignment within specifications, use glass alignment gauge blocks tool J-23711 or equivalent (Fig. 5-110). For proper use of gauge blocks, refer to the following procedure:

- Remove upper and lower portion of door trim assembly and peel back water deflector sufficiently to gain access to the inner panel cam. (Refer to the "Door Trim" portion of this section for door trim assembly removal).

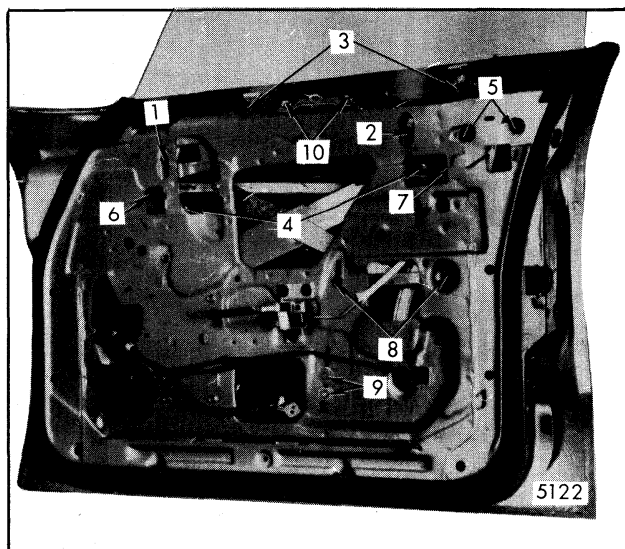


Fig. 5-115-Window Removal and Adjustment - "B and C-39, 49" and "C-69" Styles

- | | |
|--|--|
| 1. Front Up-Travel Stop Screw | 6. Front Guide Upper Screw |
| 2. Rear Up-Travel Stop Screw | 7. Rear Guide to Guide Upper Bracket Screw |
| 3. Belt Trim Support Retainer Screw | 8. Inner Panel Cam Screws |
| 4. Lower Sash Channel Cam Access Holes | 9. Down-Travel Support Bracket Screw |
| 5. Rear Guide Upper Bracket Screws | 10. Guide Pin Stabilizer |

2. Detach side roof rail weatherstrip at lower front corner and carefully remove from retainer over door window.

3. Lower front and rear door windows and install gauge blocks, tool J-23711-2 (black) or equivalent into side roof rail weatherstrip retainer above and in from upper front and rear corners of glass as shown in Figure 5-111. Then install gauge block, tool J-23711-1 (grey), or equivalent into the windshield pillar retainer slightly above beltline. Grooves on sides of gauge blocks must be fully engaged with side roof rail weatherstrip.

NOTE: On "6CB69" styles because glass must be adjusted within a "fixed" opening, install glass suction cups on interior surface of glass (as similarly used in Fig. 5-119 for "F" styles), to enable adjuster to shift glass when making adjustments with door in a closed position.

4. Working from inside body, with door in the closed position, remove front door guide pin stabilizer attaching screws and remove pin stabilizer ("10", Fig. 5-115). Loosen front and rear up-travel stops ("1" and "2", Fig. 5-115) and belt trim support retainers ("3", Fig. 5-115).

5. Raise front door window assembly to approximately 1" from full-up position, as illustrated in Figure 5-111. If distance (space) between upper edge of glass and front and rear gauge blocks is equal (as shown in Fig. 5-111), proceed with step 6. If distance (space) between upper edge of glass and both upper gauge blocks is not equal, loosen inner panel cam attaching screws ("8", Fig. 5-115) and adjust glass as necessary.

6. Raise front door window assembly until contact is established between upper and forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contacts all three gauge blocks at the same time (as shown in Fig. 5-112), proceed with step 7. If upper and forward edge of glass does not contact all three gauge blocks simultaneously, loosen fore and aft adjustment on rear guide ("5", Fig. 5-115) and move glass forward or rearward until the edge of glass contacts all three gauge blocks in full-up position.

7. Completely loosen upper ends of front and rear guides. Apply firm outboard pressure against upper end of the front guide to remove slack in the system and to hold upper inner edge of glass inboard against outer edge of gauge blocks, as shown in Figure 5-113. Then tighten, upper guide attaching screws. Repeat operation with rear guide. Guides will now be coordinated to the plane of the glass.

NOTE: Inner surface of glass must contact outer surface of both upper blocks during this adjustment.

8. With glass in full-up position against upper gauge blocks, tighten up-travel stops ("1" and "2", Fig. 5-115) and adjust belt trim support retainers ("3", Fig. 5-115) outboard until they lightly contact door glass, then tighten. Reinstall front door guide pin stabilizer pin inboard to gain firm contact with guide support then reinstall and tighten attaching screws.

9. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and seal weatherstrip as previously described. Make sure when the glass is cycled it does not come in contact with the blow-out clip.

10. After all adjustments have been made, torque all previously loosened hardware attaching nuts to 72 inch-pounds and attaching screws to 60 to 90 inch-pounds.

11. Install previously removed trim and water deflector.

Removal and Installation - "B and C-39, 49" and "C-69" Styles

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Remove front and rear window up-travel stops ("1" and "2", Fig. 5-115) and guide pin stabilizer ("10", Fig. 5-115).
3. Loosen front and rear belt trim support retainers ("3", Fig. 5-115).
4. With window in three-quarter-down position, remove lower sash channel cam to glass attaching nuts ("4", Fig. 5-115). Remove window by lifting straight up and aligning rollers with notches provided in the door inner panel. Remove rear end of window first, then front end.
5. To install, reverse removal procedure. Adjust window for proper alignment and operation as described previously. Torque all previously removed attaching nuts to 72 inch-pounds and all attaching screws to 60 to 90 inch-pounds. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.

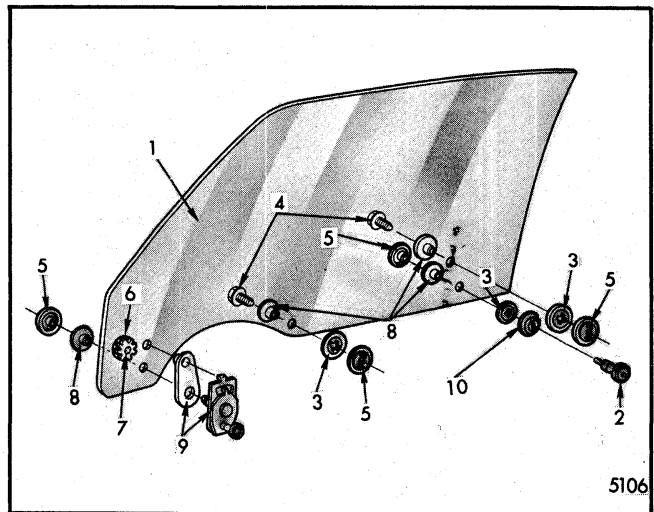


Fig. 5-116-Door Window Assembly - "F" Styles

- | | |
|---------------------------|---------------------------------|
| 1. Window Assembly | 7. Glass Bearing Fastener Cap |
| 2. Roller | 8. Spacers |
| 3. Washer (Plastic) | 9. Roller Assembly (Bell Crank) |
| 4. Bolt Inner Panel Cam | 10. Washer (Metal) |
| 5. Nut | |
| 6. Glass Bearing Fastener | |

DOOR WINDOW ASSEMBLY - "F" Styles

The door window assembly consists of a solid tempered safety plate glass window and an individually bolted-on roller at the rear and a roller assembly (bellcrank) at the front. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

Figure 5-116 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

NOTE: When installing glass attachments, torque attaching nuts to 72 inch-pounds (6 foot-pounds). Also, when replacing door glass, replace door glass washers and spacers ("3" and "8", Fig. 5-116). When the glass is cycled, it must not come in contact with the blow-out clip.

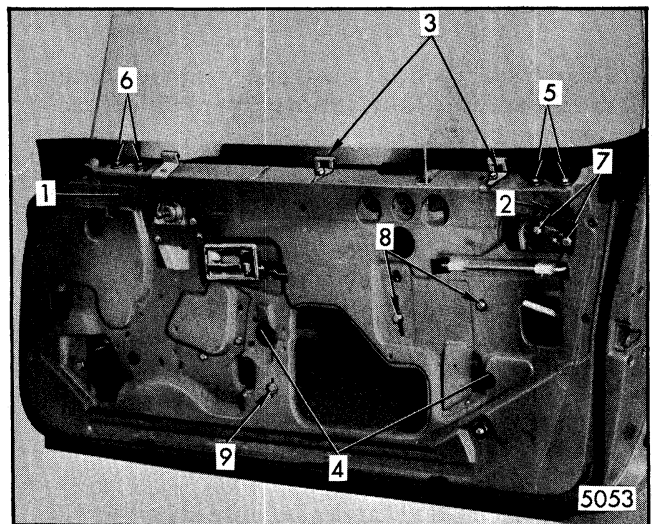


Fig. 5-117-Window Removal and Adjustment - "F" Styles

Diagnosis and Adjustment

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("1" and "2", Fig. 5-117) and inner panel cam screws ("8", Fig. 5-117) and raising or lowering front edge of glass in relation to rear edge of glass as required. Then tighten inner

- | | |
|--|---|
| 1. Front Up-Travel Stop Screw | 6. Front Guide Upper Screws |
| 2. Rear Up-Travel Stop Screw | 7. Rear Guide to Guide Upper Bracket Screws |
| 3. Belt Trim Support Retainers | 8. Inner Panel Cam Screws |
| 4. Lower Sash Channel Cam Access Holes | 9. Window Down Travel Bumper Support |
| 5. Rear Guide Upper Bracket Screws | |

panel cam attaching screws and raise glass to desired height to establish proper contact with side roof rail weatherstrip. Position up-travel stops to contact stops on glass and torque attaching screws to 60 to 90 inch-pounds.

2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE** - Loosen upper ends of front and rear guides ("5" and "6", Fig. 5-117) and glass belt trim support retainers ("3", Fig. 5-117) and position guide inboard or outboard as required. Outboard adjustment of the guide moves the upper edge of the glass inboard. Conversely, inboard adjustment moves the upper edge of the glass outboard. With glass in a full-up position, position trim support retainers against inner surface of glass and tighten attaching screws. Torque all previously loosened hardware attachment components to 60 to 90 inch-pounds. Make sure that when glass is cycled, it does not come in contact with the blow-out clip.
3. **WINDOW TOO HIGH OR LOW IN UP POSITION** - Loosen front and rear up-travel stops ("1" and "2", Fig. 5-117) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Position up-travel stops to contact stops on glass and torque up-travel stop screws to 60 to 90 inch-pounds.
4. **WINDOW TOO HIGH OR LOW IN DOWN POSITION** - Loosen down-travel bumper support ("9", Fig. 5-117) and lower or raise window to desired full-down glass height. Then position bumper support against lower edge of glass and torque attaching screw to 60 to 90 inch-pounds.
5. **WINDOW TOO FAR FORWARD OR REARWARD** - Loosen upper end of rear guide ("7", Fig. 5-117) and reposition glass as necessary. Because the roller assembly (bellcrank) which attaches to the glass at the front pivots, the front guide does not have to be adjusted during fore and aft window alignment. Torque guide attachments to 60 to 90 inch-pounds.
6. **WINDOW MECHANISM BINDS WHEN OPERATING** - Ease of window operation and window stability depends a great extent on the adjustment of the window belt trim support retainers at the beltline ("3", Fig. 5-117). The support retainers should contact the glass throughout the full cycle of the window. However, in some cases due to the slight variations in glass contour, the strip may lose contact with the glass halfway through the cycle. This is permissible provided it does not result in loose glass or restrict ease of window operation. After the belt trim support retainers have been adjusted,

torque the attaching screws to 60 to 90 inch-pounds.

Glass Alignment Using Gauge Blocks - "F" Styles

To consistently align door glass within specifications and to facilitate adjustment of this glass, use glass alignment gauge block tool J-23394 or equivalent (Fig. 5-118). For proper use of gauge blocks, refer to the following procedure.

1. Remove door trim assembly and inner panel water deflector as described in "Door Trim" and "Front and Rear Doors" portion of this section.
2. Detach side roof rail weatherstrip at lower front and rear corners and carefully remove from retainer.
3. With glass in a partially down position, install gauge blocks, tool J-23394-2 (blue) or equivalent, into side roof rail weatherstrip retainer above upper front and rear corners of the glass as shown in Figure 5-119. Then, install glass suction cups on interior surface of glass (Fig. 5-119) to enable adjuster to shift glass when making adjustments with door in a closed position.

NOTE: When installing gauge blocks (blue) or equivalent into upper retainer on "F" styles, handle portion of blocks must protrude outboard (Fig. 5-119). Also, grooves on sides of blocks must be fully engaged with side roof rail weatherstrip retainer.

4. Working from inside body, with door in a closed position, loosen front and rear up-travel stops ("1" and "2", Fig. 5-117) and belt trim support retainers ("3", Fig. 5-117).

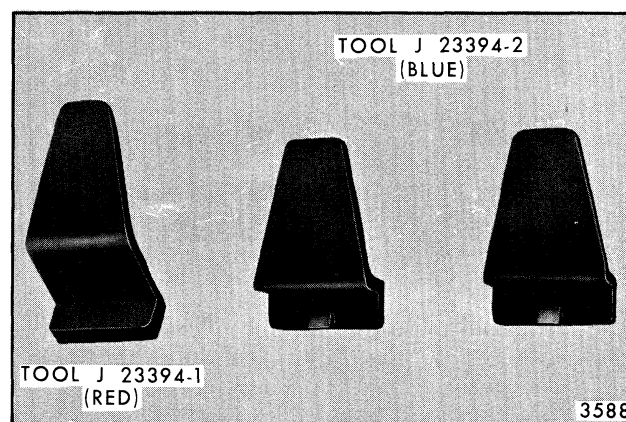


Fig. 5-118-Glass Alignment Gauge Blocks - Tool J-23394 or Equivalent (Set of Three Blocks) - "F" Styles

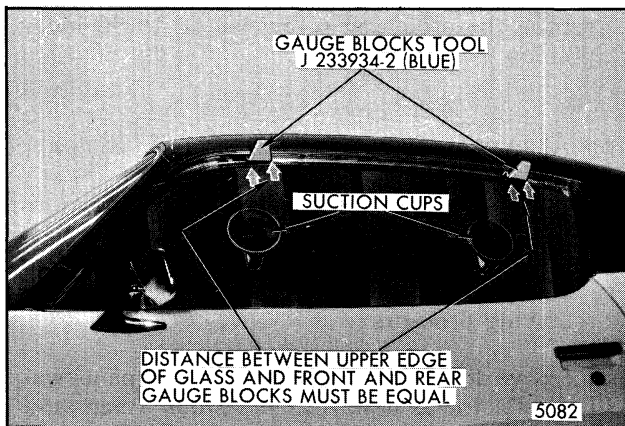


Fig. 5-119-Door Window - Rotated ("Cocked") Glass Alignment - "F" Styles

5. Raise door window to approximately 1" from full-up position as illustrated in Figure 5-119. If distance (space) between upper edge of glass and front and rear gauge blocks is equal (as shown in Fig. 5-119), proceed with step 6. If distance (space) between upper edge of glass and both upper gauge blocks is not equal loosen inner panel cam attaching screws ("8", Fig. 5-117) and adjust as necessary.
6. Lower glass and install gauge block, tool J-23394-1 (red), or equivalent into the windshield pillar retainer slightly above the beltline (Fig. 5-120).

NOTE: When installing gauge block (red) or equivalent into windshield pillar retainer, handle portion of block must protrude inboard. Also grooves on side of block must be fully engaged with retainer.

Raise door window assembly until contact is

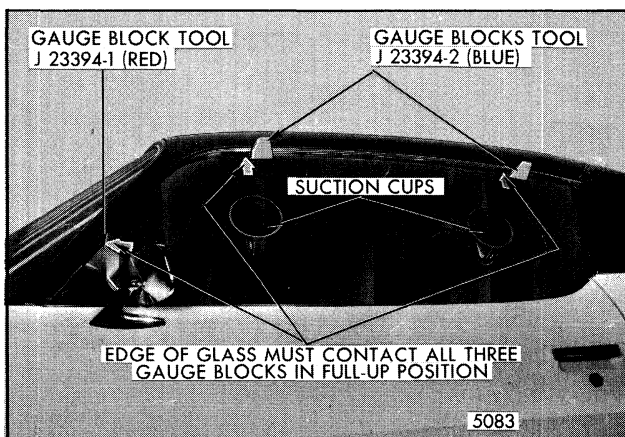


Fig. 5-120-Door Window - Fore and Aft Alignment - "F" Styles

established between upper and forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contacts all three gauge blocks at the same time (as shown in Fig. 5-120), proceed with step 7. If upper and forward edge does not contact all three gauge blocks simultaneously, loosen fore and aft adjustment on rear guide ("7", Fig. 5-117) and move glass forward or rearward until edge of glass contacts all three gauge blocks in full-up position.

7. Completely loosen upper and lower ends of front and rear guides ("5" and "6", Fig. 5-117). Apply firm outboard pressure against upper end of front guide to remove slack in system and to hold upper inner edge of the glass inboard against outer edge of tab on gauge block. Then tighten front guide upper, then lower attaching screws. Repeat operation with rear guide. Guides will now be coordinated to plane of glass.
8. With glass in full-up position against gauge blocks, tighten up-travel stops ("1" and "2", Fig. 5-117) and adjust belt trim support retainers ("3", Fig. 5-117) outboard for light contact.
9. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and seal weatherstrip with a pumpable sealer. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.
10. After all adjustments have been performed, torque all previously loosened hardware attaching nuts to 72 inch-pounds and screws to 60 to 90 inch-pounds.
11. Reinstall previously removed trim and water deflector.

Removal and Installation - "F" Styles

1. Remove door trim assembly and inner panel water deflector.
2. Remove front and rear up-travel stops ("1" and "2", Fig. 5-117).
3. Loosen front and rear belt trim support retainers ("3", Fig. 5-117).
4. With window in three-quarter-down position, remove lower sash channel cam to glass attaching nuts ("4", Fig. 5-117). Remove window by lifting straight up and aligning rollers with notches provided in the door inner panel.

5. To install, reverse removal procedure. Adjust window for proper alignment and operation as described previously. Torque previously removed attaching nuts to 72 inch-pounds and attaching screws to 60 to 90 inch-pounds. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.

DOOR WINDOW ASSEMBLY - "H and X" Styles

The door window assembly consists of a frameless piece of solid tempered safety plate glass bonded to a lower sash channel which incorporates a lower sash channel cam. With this design, the door glass, lower sash channel and cam are removed from the door as a unit and replacement glass is installed as a bench operation.

Adjustments

1. The inner panel cam (Fig. 5-121) is adjustable and can correct a rotated ("cocked") window assembly.
2. Window down-travel is determined by the position of the down-travel stop on "H" (less "07, 27") and "X" styles. "H-07 and 27" styles do not have an adjustable down stop. To adjust down-travel, loosen stop (Fig. 5-121 - "H" (less 07, 27) styles, Fig. 5-67 - "X" styles) and adjust glass to desired height at beltline. Position stop to contact glass ("X" styles) or regulator ("H" styles) and torque attaching screw to 60 to 90 inch-pounds.

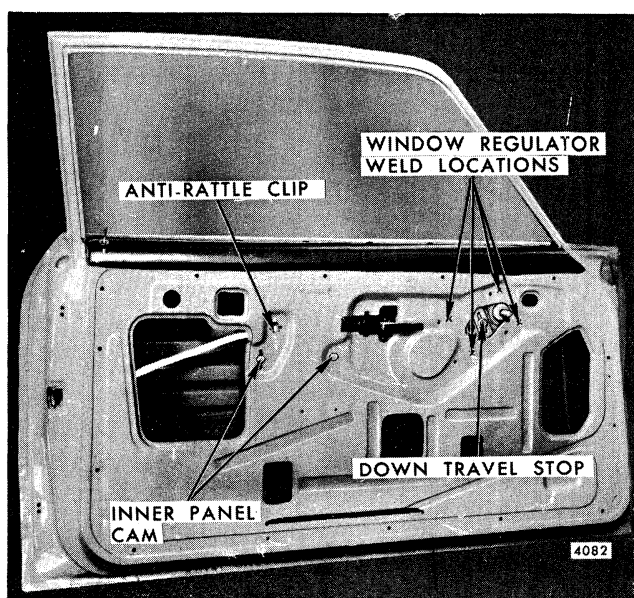


Fig. 5-121-Window Removal and Adjustment - Typical Door for "H" and "X" Styles

Removal and Installation

1. Remove door trim assembly, inner panel water deflector and door window inner belt sealing strip as previously described.
2. Lower window to half-down position and remove inner panel cam (Fig. 5-121).
3. Remove front glass run channel ("11", Figure 5-62 for "H-07" styles, "2", Fig. 5-66 for "X" styles). Removal is not necessary for "H-27" style.
4. Lower front edge of glass and slide window lower sash channel cam off window regulator lift arm rollers. Remove window inboard of door upper frame. For "H-27" style, remove window outboard of door upper frame.
5. To install, reverse removal procedure. Adjust window for proper alignment. Torque attaching screws to 60 to 90 inch-pounds.

FRONT DOOR WINDOW REGULATOR - Manual and Electric - "X" Styles

Removal and Installation

1. Remove front door trim assembly and inner panel water deflector.
2. Secure window in "full-up" position with pieces of cloth-backed body tape applied over door frame.
3. Mark location and remove inner panel cam attaching screws ("1", Fig. 5-67) and inner panel cam as previously described. On electrical regulators, disconnect wire harness connector at window regulator motor.
4. Drive out rivet center pin with punch and drill out four regulator attaching rivets with a 1/4" drill bit; then remove regulator.

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTER-BALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE "DOOR WINDOW REGULATOR ELECTRIC MOTOR" REMOVAL AND INSTALLATION PROCEDURE IN THE "FRONT AND REAR DOOR" PORTION OF THIS SECTION.

5. If replacement regulator does not have attaching nuts, place "U" nut (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.
6. To install regulator, attach to inner panel with 1/4 - 20 x 7/16" attaching screw, Part No. 9642853 or equivalent. Torque attaching screws to 72 inch-pounds.
7. Reconnect wire harness connector to window regulator motor on electrically operated regulators. Reinstall previously removed parts.

FRONT DOOR WINDOW REGULATOR - Manual and Electric - "A-29, 35" Styles

Removal and Installation - Refer to Figure 5-50

1. Remove upper and lower door trim assembly and detach inner panel water deflector.
2. Prop window in full-up position by inserting a rubber door stop between the door inner panel and door glass at front and rear of window (Fig. 5-122).
3. Mark location and remove inner panel cam attaching screws ("8", Fig. 5-50) and remove down stop ("12", Fig. 5-50). On electrically operated regulators, disconnect wire harness connector at window regulator motor.
4. Drive out regulator attaching rivet center pins with punch and drill out rivets with 1/4" drill bit.
5. Slide front regulator upper balance arm off sash cam, then slide rear lift arm forward off sash cam.
6. Slide regulator rearward and remove through lower rear access hole.

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTER-BALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE "DOOR WINDOW REGULATOR ELECTRIC MOTOR" REMOVAL AND INSTALLATION PROCEDURE IN THE "FRONT AND REAR DOOR" PORTION OF THIS SECTION.

nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.

8. To install regulator, reverse removal procedure, attach regulator to inner panel with 1/4 - 20 x 7/16" screws (Part No. 9642853 or equivalent). Torque regulator attaching screws to 72 inch-pounds. Torque other attaching screws to 60 to 90 inch-pounds.

DOOR WINDOW REGULATOR - Manual and Electric - "A-37, 57, 80" Styles

Removal and Installation - Refer to Figure 5-51

1. Remove upper and lower door trim assembly and detach inner panel water deflector.
2. Prop window in full-up position by inserting rubber wedge door stops between window and inner panel (at belt) at front and rear of window (Fig. 5-122).
3. Mark location and remove inner panel cam attaching screws ("8", Fig. 5-51).
4. Mark location and remove rear guide upper and lower attaching screws ("5" and "7", Fig. 5-51), then remove rear guide.
5. On electric regulators mark location and remove down-travel stop ("12", Fig. 5-51). Disconnect wire harness connector at window regulator motor.

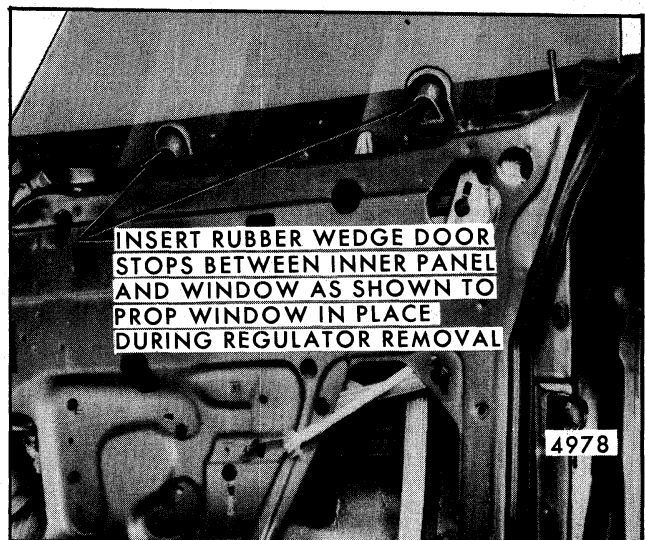


Fig. 5-122-Door Window Propped In Place For Regulator Removal

7. If replacement regulator does not have attaching

6. Drive out regulator attaching rivet center pins with punch and drill out rivets with 1/4" drill bit.
7. Remove front lower sash channel cam to glass attaching nut ("10", Fig. 5-51).
8. Slide regulator forward until front upper balance arm roller is out of sash channel cam.
9. Lift regulator to clear rear roller on glass and slide rear regulator lift arm rearward until it disengages from rear of sash channel cam.
10. Remove regulator through rear access hole.

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTER-BALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE "DOOR WINDOW REGULATOR ELECTRIC MOTOR" REMOVAL AND INSTALLATION PROCEDURE IN THE "FRONT AND REAR DOOR" PORTION OF THIS SECTION.

11. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.
12. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4 - 20 x 7/16" attaching screws (Part No. 9642853 or equivalent). Torque regulator attaching screws and front lower sash channel cam to glass attaching nut to 72 inch-pounds. Torque other attaching screws to 60 to 90 inch-pounds.

DOOR WINDOW REGULATOR - Manual and Electric - "B, C and E" Two-Door Styles

Removal and Installation - Refer to Figure 5-55

1. Remove upper and lower portion of door trim assembly and detach inner panel water deflector.
2. Remove inside locking rod as previously described.
3. Lower window to half-down position. Drive out regulator attaching rivet center pins with punch,

then drill out rivets ("4", Fig. 5-55) with 1/4" drill bit. Disengage regulator lift arm roller from lower sash channel cam and prop window in full-up position using two rubber door wedge stops between inner panel at belt and door window as shown in Figure 5-122. On manual styles, remove regulator assembly through large access hole. On electric styles, rotate regulator so that motor portion of regulator comes out access hole first.

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTER-BALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE "DOOR WINDOW REGULATOR ELECTRIC MOTOR" REMOVAL AND INSTALLATION PROCEDURE IN THE "FRONT AND REAR DOOR" PORTION OF THIS SECTION.

4. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.
5. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4 - 20 x 7/16" attaching screws (Part No. 9642853 or equivalent). Torque attaching screws to 72 inch-pounds

FRONT DOOR WINDOW REGULATOR - Manual - All "B and C" Four-Door Styles

Removal and Installation - Refer to Figure 5-57

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Lower window and remove lower sash channel cam attaching stud nuts, except on "B" closed styles. On "B" closed styles, the regulator lift and balance arms can be disengaged from lower sash channel cam without removal of cam from glass.

NOTE: On "B" closed styles, raise window to full-up position and prop in place with two rubber wedge door stops between inner panel (at belt) and door window as shown in Figure 5-122.

3. Mark location and remove inner panel cam attaching screws.

4. Drive out regulator attaching rivet center pins with punch, then drill out rivets with 1/4" drill bit. Remove regulator through large access hole.
5. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.
6. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4 - 20 x 7/16" attaching screws (Part No. 9642853 or equivalent). Torque regulator attaching screws and lower sash channel cam attaching nuts to 72 inch-pounds

FRONT DOOR WINDOW REGULATOR - Electric - All "B and C" Four- Door Styles

Removal and Installation - Refer to Figure 5-57

1. Remove upper and lower portion of door trim assembly and detach inner panel water deflector.
2. Remove door window and inner panel cam as previously described.
3. Disconnect wire harness connector at regulator motor.
4. Drive out regulator attaching rivet center pins with punch, then drill out rivets with 1/4" drill bit. Remove regulator through large access hole.

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTER-BALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE "DOOR WINDOW REGULATOR ELECTRIC MOTOR" REMOVAL AND INSTALLATION PROCEDURE IN THE "FRONT AND REAR DOOR" PORTION OF THIS SECTION.

5. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.
6. To install regulator, reverse removal procedure.

Attach regulator to inner panel with 1/4 - 20 x 7/16" attaching screws (Part No. 9642853 or equivalent). Torque regulator attaching screws to 72 inch-pounds. Torque other attachments to 60 to 90 inch-pounds.

DOOR WINDOW REGULATOR - Manual and Electric - "F" Styles

Removal and Installation - Refer to Figure 5-59

1. Remove door trim assembly and detach inner panel water deflector.
2. Mark location and remove door window and inner panel cam as previously described.
3. On electric styles, disconnect wire harness connector at regulator motor.
4. Drive out regulator attaching rivet center pins with punch, then drill out rivets with 1/4" drill bit. Remove regulator through large access hole.

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTER-BALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE "DOOR WINDOW REGULATOR ELECTRIC MOTOR" REMOVAL AND INSTALLATION PROCEDURE IN THE "FRONT AND REAR DOOR" PORTION OF THIS SECTION.

5. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.
6. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4 - 20 x 7/16" attaching screws (Part No. 9642853 or equivalent). Torque regulator attaching screws to 72 inch-pounds. Torque other attachments to 60 to 90 inch-pounds.

DOOR WINDOW REGULATOR - All "H" Styles

Window regulator assemblies on all "H" styles are welded to the door inner panel. Due to the positive attachment of the regulator assembly to the door

inner panel, inner panels and service replacement regulators have pierced holes ("5", Fig. 5- 61) and are attached with "U" nuts and standard 7/16" attaching screws.

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.
2. Tape window in a full-up position and remove inner panel cam as previously described.
3. Center punch visible window regulator weld marks on door inner panel (refer to Fig. 5-121 for location). Using a spot weld cutter, tool J-8943-01 or equivalent, drill out each weld (Fig. 5- 123)..

NOTE: A slight amount of weld may still retain the regulator assembly to the inner panel. Drive a chisel between the regulator assembly and inner panel to separate the regulator from the panel.

4. Slide regulator assembly balance and lift arm rollers out of lower sash channel cam, then remove regulator through large access hole.
5. Place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole on replacement regulator. Be sure integral nut is in outboard side of regulator back plate.
6. To install regulator assembly, slide balance and lift arm rollers into lower sash channel cam and

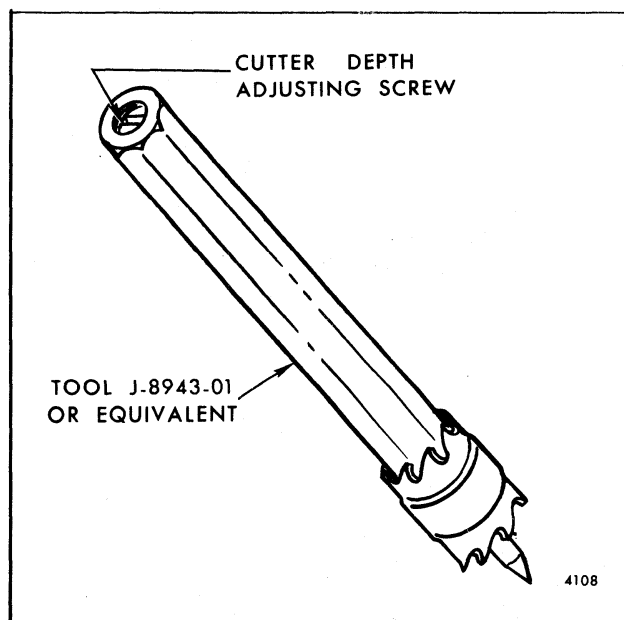


Fig. 5-123-Spot Weld Cutter

align regulator attaching holes with pierced holes in the door inner panel. Attach regulator assembly to door inner panel with 1/4 - 20 x 7/16" attaching screw (Part No. 9642853 or equivalent). Install all previously removed parts. Torque attaching screws to 72 inch-pounds.

FRONT DOOR INNER PANEL CAM - All Except "B, C and E" Two-Door Styles

Removal and Installation

1. On "F, H and X" styles, remove door trim assembly and detach inner panel water deflector sufficiently to gain access to the inner panel cam. On "A, B and C" styles, remove upper and lower portion of door trim assembly.
2. With window in raised position, remove inner panel cam attaching screws and slide cam off regulator balance arm roller ("11", Fig. 5-59 is typical of attachment for all styles).
3. To install, reverse removal procedure.

NOTE: The ends of the cam have provisions for up and down adjustment to correct a rotated window (not parallel with top of door upper frame or side roof rail weatherstrips).

FRONT DOOR WINDOW REAR GUIDE - All "A" Styles

Removal and Installation - Refer to Figure 5-50

1. Remove front door upper and lower trim assembly and inner panel water deflector.
2. With window in full-up position, mark location of rear guide upper attaching screws ("5" and "7", Fig. 5-50) and rear up-travel stop (on rear guide) attaching screw ("3", Fig. 5-50). Remove stop from rear guide.
3. Remove rear guide upper attaching bracket to door inner panel attaching screws ("5", Fig. 5-50).
4. Remove rear guide lower attaching screw ("7", Fig. 5-50).
5. Slide lower end of guide forward and disengage from roller. Remove guide, upper end first, through access hole.
6. To install reverse removal procedure. Align components to previously marked positions.

Torque attaching screws to 60 to 90 inch-pounds. If additional adjustment is required, refer to "Door Window" adjustments.

FRONT DOOR WINDOW REAR GUIDE - "B" Closed Styles

Removal and Installation - Refer to Figure 5-53

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. With window in full-up position, remove rear guide upper and lower attaching screws ("2" and "3", Fig. 5-53).
3. Pull guide down and forward to disengage from window roller and remove from door through large access hole.
4. To install, reverse removal procedure. Torque attaching screws to 60 to 90 inch-pounds. If adjustment is required, refer to "Door Window" adjustment.

DOOR WINDOW GUIDE TUBE, UPPER AND LOWER SASH GUIDES - "B, C and E" Two-Door Styles

Removal and Installation - Refer to Figure 5-55

1. Remove door trim assembly (upper and lower portion) and inner panel water deflector as previously described.
2. Prop window in half-raised position with rubber door stop wedges as shown in Figure 5-122.
3. Mark location of lower sash upper and lower guide attachments ("2" and "5", Fig. 5-55) and remove attachments.
4. Remove guide tube upper and lower attachments ("1", Fig. 5-55) lower guide tube into door and remove through access hole, upper end first, along with upper and lower sash guides.
5. To install, reverse removal procedure. Install upper and lower sash guides to pre-marked position to insure proper glass alignment. Torque previously removed attaching nuts to 72 inch-pounds and attaching screws to 60 to 90 inch-pounds. If additional adjustment is required, refer to "Door Window" adjustment.

FRONT DOOR WINDOW FRONT GUIDE AND/OR REAR GUIDE - "B and C" Four-Door Hardtop Styles

Removal and Installation - Refer to Figure 5-57

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. With window in a full-up position, remove front guide upper and lower attaching screws. ("7" and "11", Fig. 5-57 for front guide; "2" and "4", Fig. 5-57 for rear guide).
3. Pull guide downward to disengage from window roller. Remove guide through large access hole.
4. To install, reverse removal procedure. Torque attaching screws to 60 to 90 inch-pounds. If adjustment is required, refer to "Door Window" adjustment.

DOOR WINDOW FRONT GUIDE AND/OR REAR GUIDE - "F" Styles

Removal and Installation - Refer to Figure 5-59

1. Remove front door trim assembly and inner panel water deflector.
2. With window in full-up position, remove front up-stop ("1", Fig. 5-59) from guide (front guide removal only).
3. Remove guide upper and lower attaching screws, ("5" and "8", Fig. 5-59 for front guide; "6" and "9", Fig. 5-59 for rear guide).
4. Pull guide down to disengage from window roller. Remove guide through large access hole.
5. To install, reverse removal procedure. Torque attaching screws to 60 to 90 inch-pounds. If adjustment is required, refer to "Door Window" adjustment.

FRONT DOOR WINDOW GLASS RUN CHANNEL - "B and X" Closed Styles

Removal and Installation

1. On "X" styles, remove front door window as previously described. On "B" styles, lower glass to a full-down position.

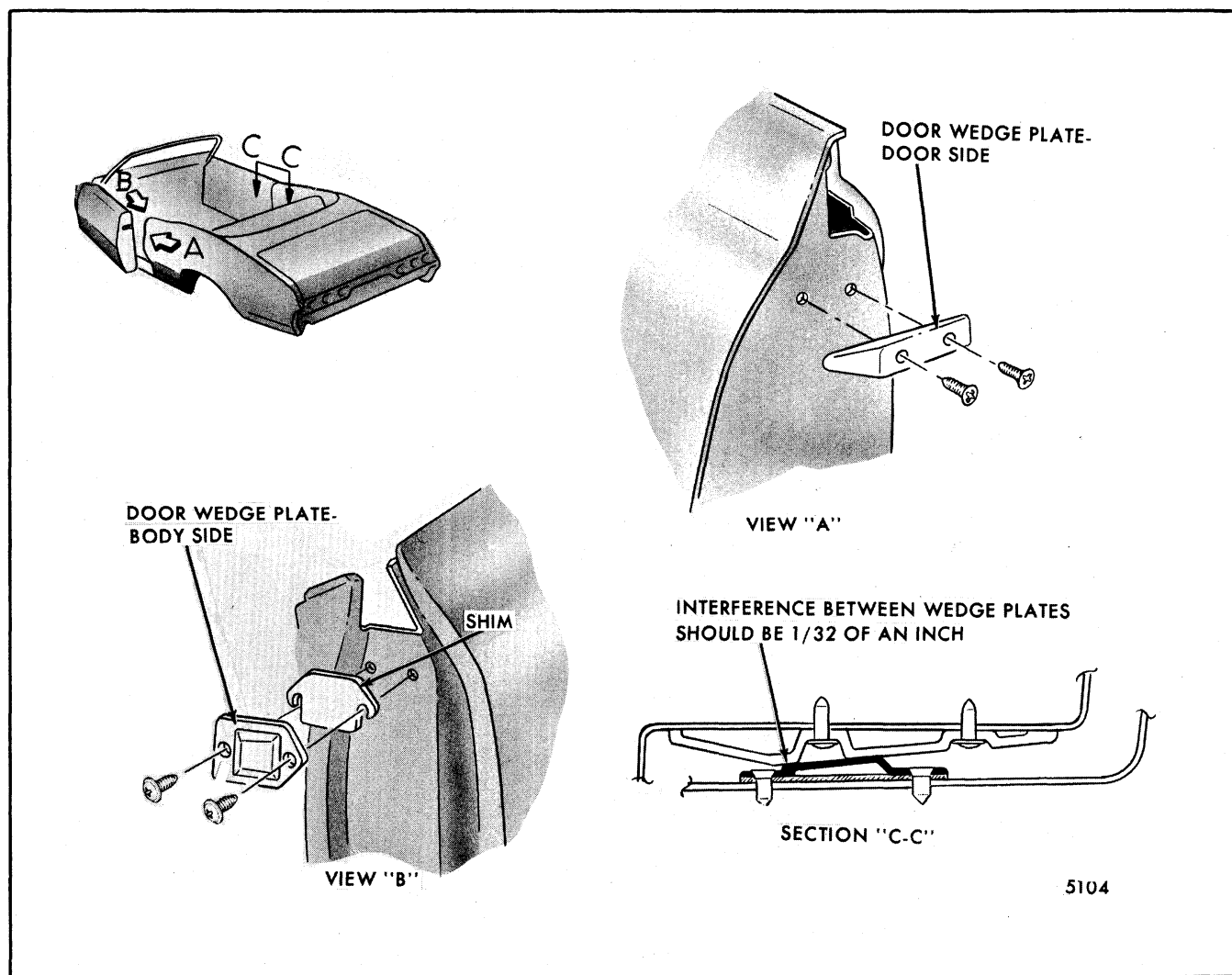


Fig. 5-124-Door Wedge Plates - "E-67" Styles

2. Starting at the upper front corner of the door upper frame, press (finger pressure) sides of run channel together and pull channel from frame.
3. To install, reverse removal procedure.

(convertible) style to give additional support to the door when it is in the closed position. One plate is installed on the body lock pillar and the other on the door lock pillar (Fig. 5-124). The plates should have 1/32" interference when the door is closed. Body side wedge plate shims are available as a service part so that this interference can be obtained.

DOOR WEDGE PLATES - Cadillac "E-67" Style

Door wedge plates are used on the Cadillac "E-67"

REAR DOORS

INTRODUCTION

Information in this section concerns operations applicable to rear doors only. Procedures for removal of water deflectors, door handles, weatherstrips and door trim are outlined in the "Front and Rear Doors" and "Door Trim" portions of this section -

see index.

Figures 5-125 through 5-136 illustrate rear doors for the various body styles with the trim assembly and inner panel water deflector removed. These figures identify the component parts of the rear door assembly and hardware attaching points.

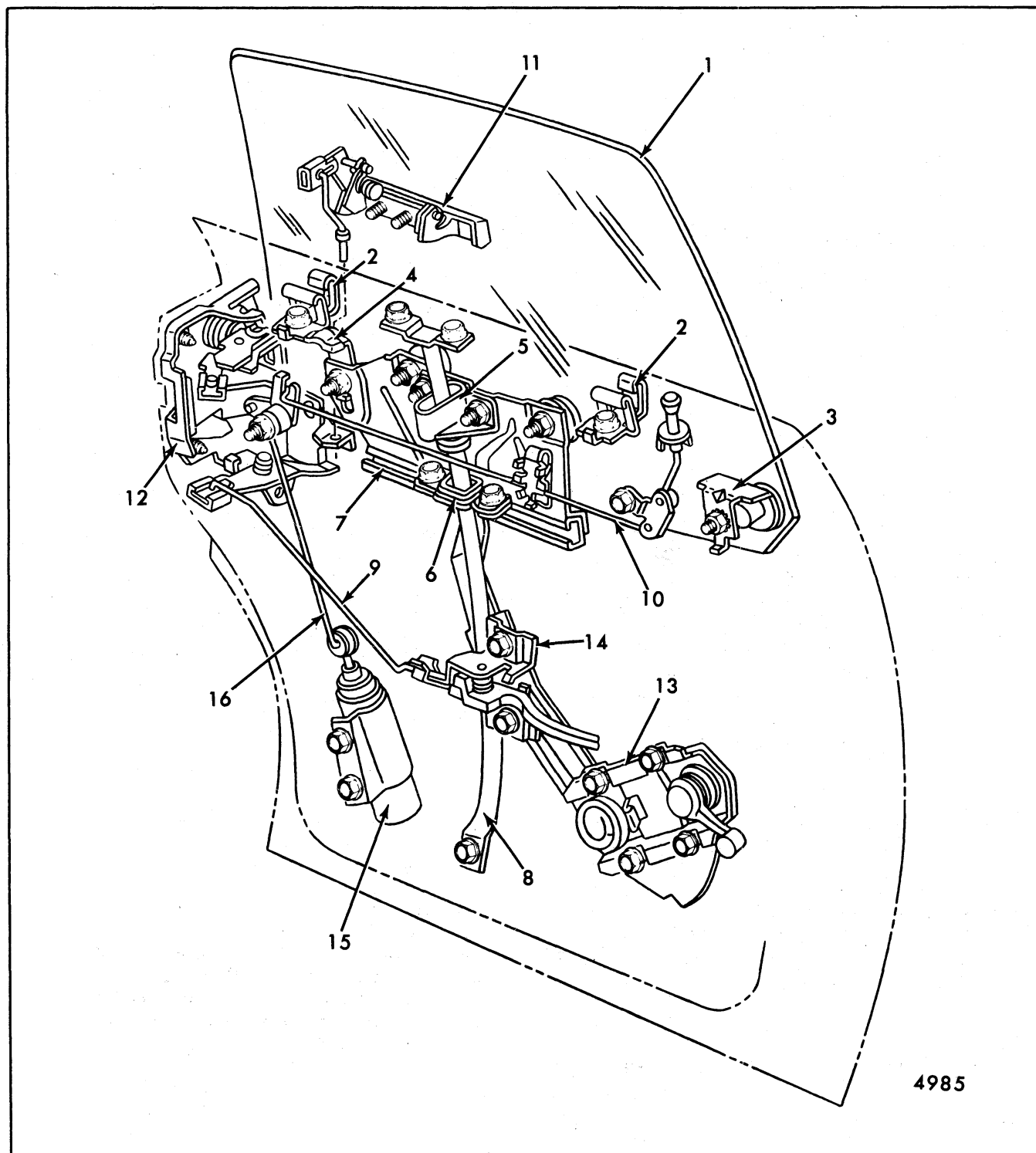


Fig. 5-125-Rear Door Hardware - "A-29,35" Styles

- | | | | |
|--------------------------------|---|---------------------------------|-------------------------------|
| 1. Window Assembly | 6. Lower Sash Lower Guide | 10. Inside Locking Rod | 14. Inside Remote Handle |
| 2. Belt Trim Support Retainers | 7. Lower Sash Guide Plate | 11. Outside Handle | 15. Door Lock Solenoid (Opt.) |
| 3. Front Up-Travel Stop | 8. Guide Tube | 12. Door Lock | 16. Solenoid Connecting Rod |
| 4. Rear Up-Travel Stop | 9. Inside Handle to Lock Connecting Rod | 13. Window Regulator (Electric) | |
| 5. Lower Sash Upper Guide | | | |

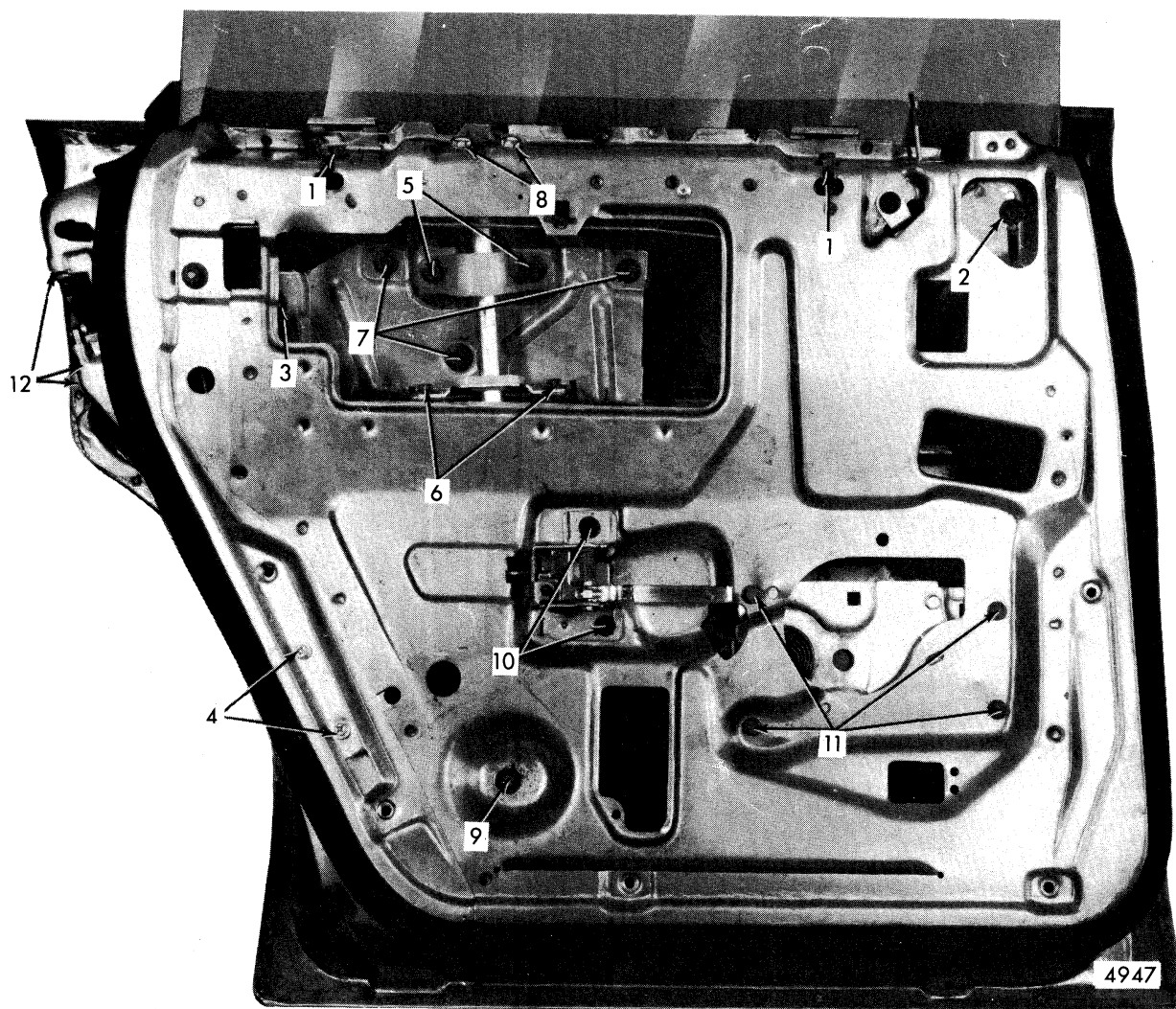
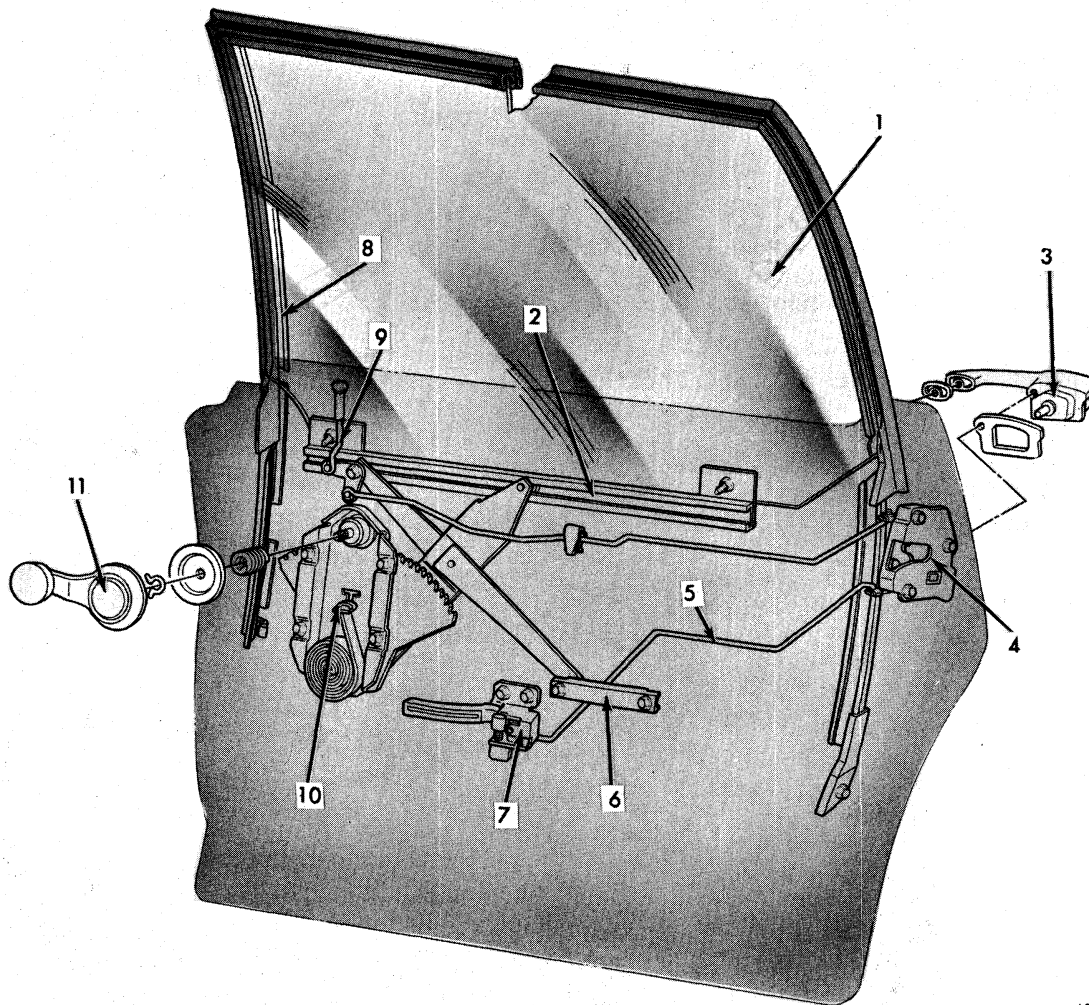


Fig. 5-126-Rear Door Hardware Attachments - "A-29,35" Styles

- | | | | |
|--|---|--|---|
| 1. Belt Trim Support Retainer Attaching Screws | 4. Door Lock Solenoid Attaching Screws | 7. Lower Sash Guide Plate Attaching Nuts | 10. Inside Remote Handle Attaching Screws |
| 2. Front Up-Travel Stop Attaching Screw | 5. Lower Sash Upper Guide Attaching Nut | 8. Guide Tube Upper Attaching Screws | 11. Window Regulator Attaching Rivets |
| 3. Rear Up-Travel Stop Attaching Screw | 6. Lower Sash Lower Guide Attaching Screw | 9. Guide Tube Lower Attaching Screw | 12. Door Lock Attaching Screws |



4137

Fig. 5-127-Rear Door Hardware - "B-35,45" Styles

- 1. Window Assembly
- 2. Lower Sash Channel Cam
- 3. Outside Handle
- 4. Door Lock

- 5. Inside Handle to Lock Connecting Rod
- 6. Inner Panel Cam
- 7. Inside Remote Handle
- 8. Glass Run Channel

- 9. Inside Locking Rod
- 10. Window Regulator
- 11. Window Regulator Handle

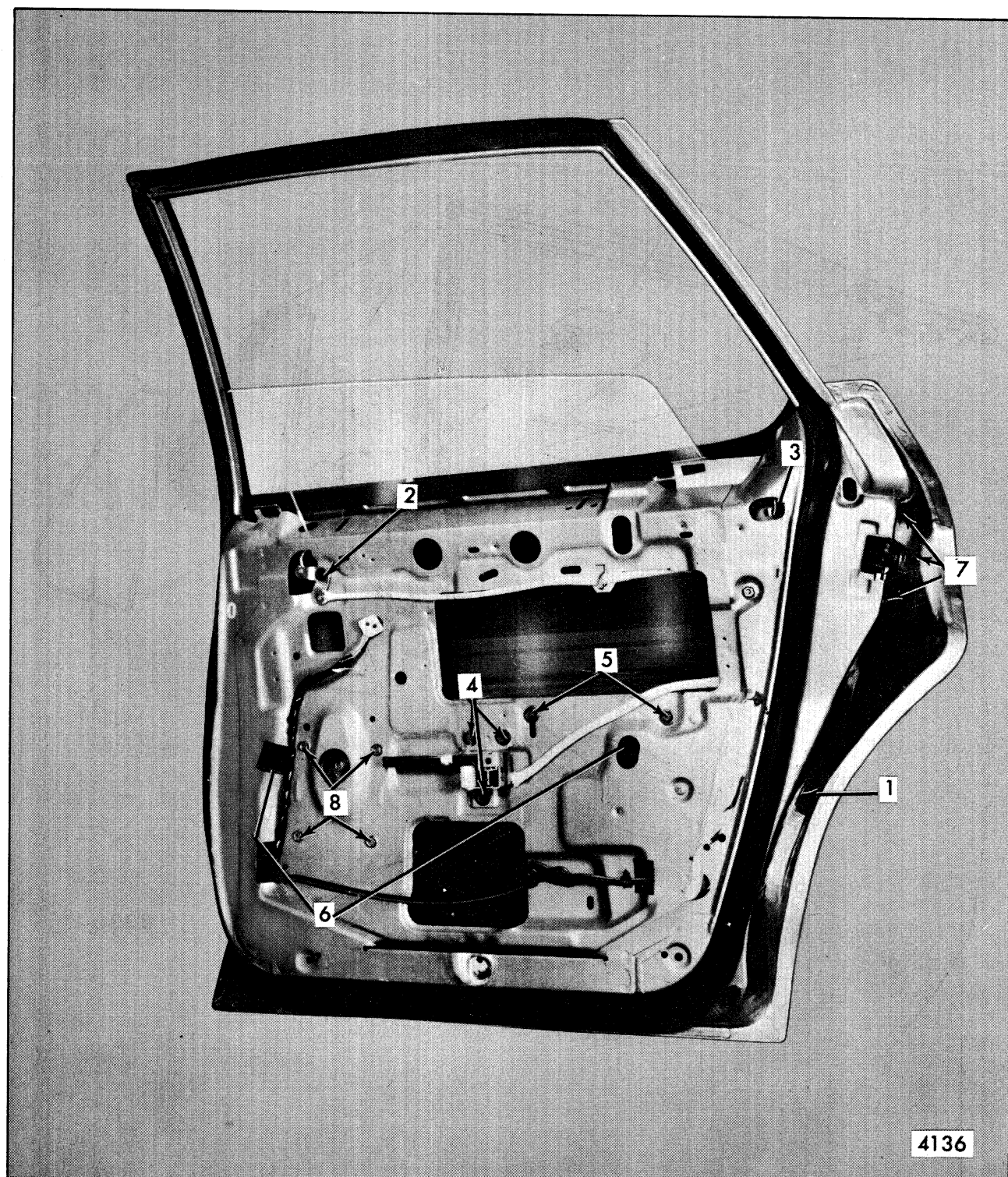
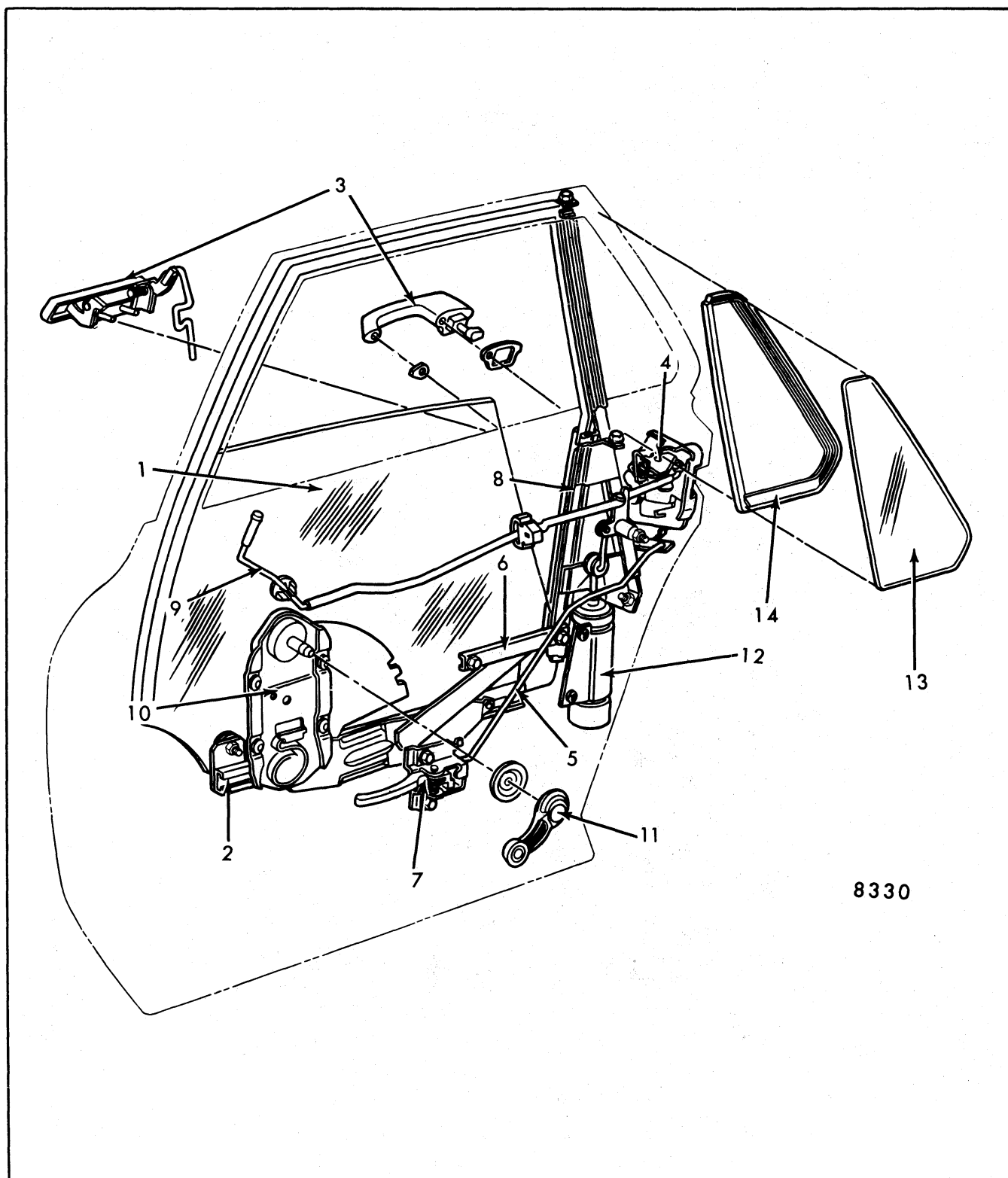


Fig. 5-128-Rear Door Hardware Attachments - "B-35,45" Styles

- | | | |
|---|---|---|
| 1. Lower Rear Glass
Run Channel Lower
Screw | 3. Lower Rear Glass
Run Channel Upper
Screw | 5. Inner Panel Cam
Screws |
| 2. Inside Locking Rod
Connecting Link
Screw | 4. Inside Remote Handle
Screws | 6. Lower Sash Channel
Cam Access Holes |
| | | 7. Door Lock Screws |
| | | 8. Window Regulator
Rivets |



8330

Fig. 5-129-Rear Door Hardware - "B-69" Styles

- | | | | |
|-----------------------|--------------------------|-----------------------|---------------------------|
| 1. Window Assembly | 5. Inside Handle to Lock | 9. Inside Locking Rod | 12. Power Door Lock |
| 2. Lower Sash Channel | 6. Inner Panel Cam | 10. Window Regulator | Solenoid (Opt.) |
| 3. Outside Handle | 7. Inside Remote Handle | 11. Window Regulator | 13. Stationary Vent Glass |
| 4. Door Lock | 8. Glass Run Channel | Handle | 14. Stationary Vent Glass |
| | | | Rubber Channel |

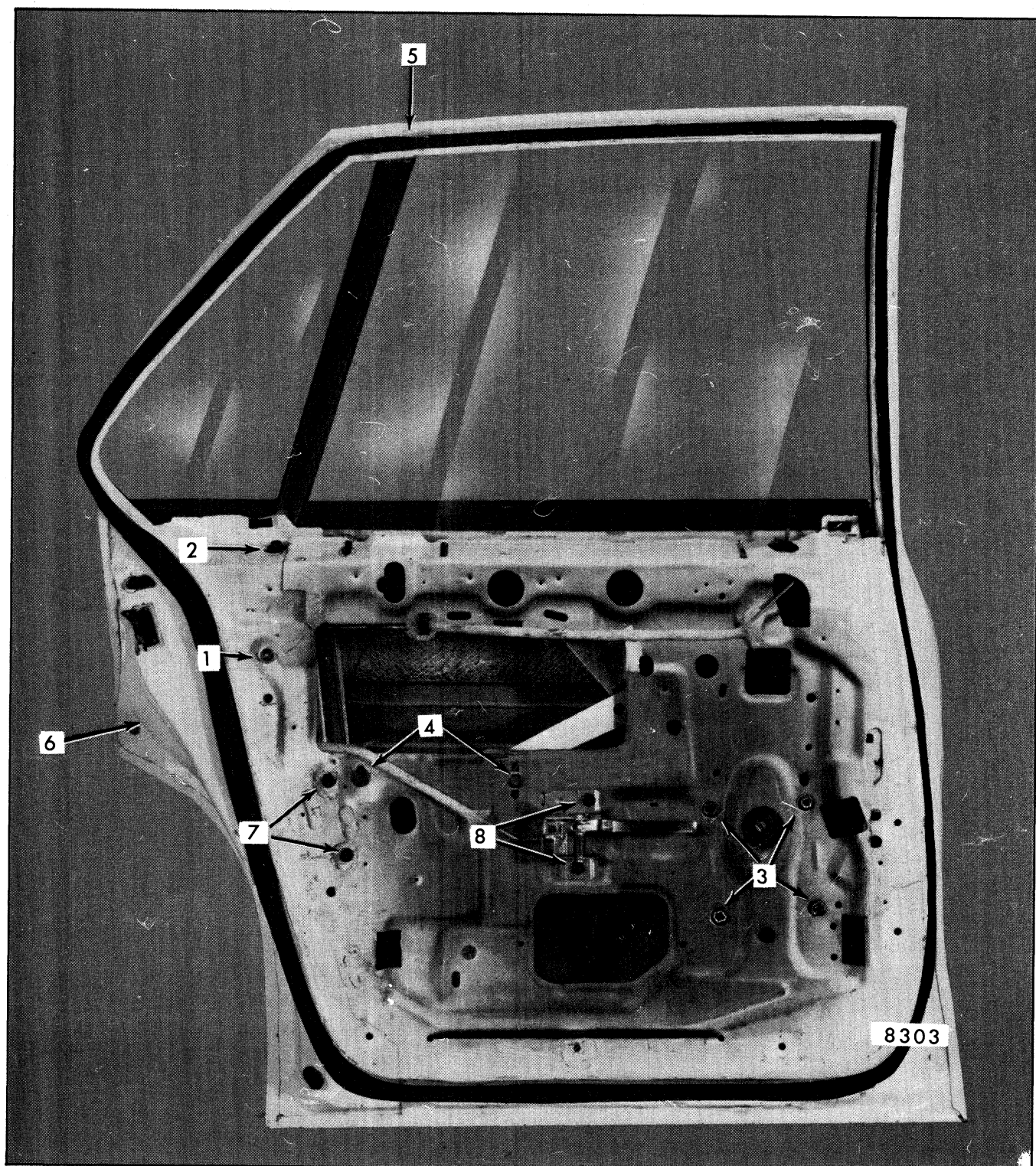
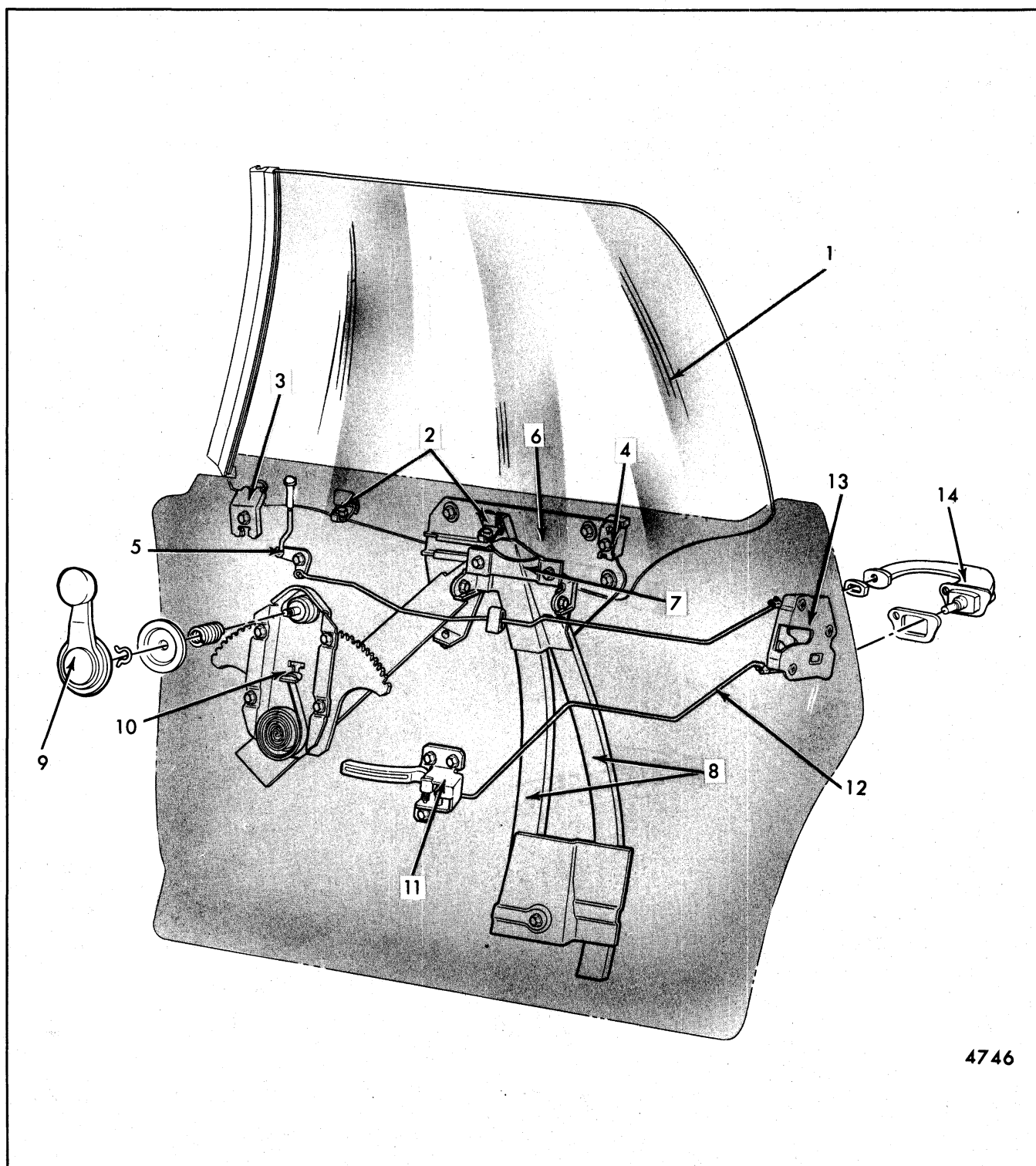


Fig. 5-130-Rear Door Hardware Attachments - "B-69" Styles

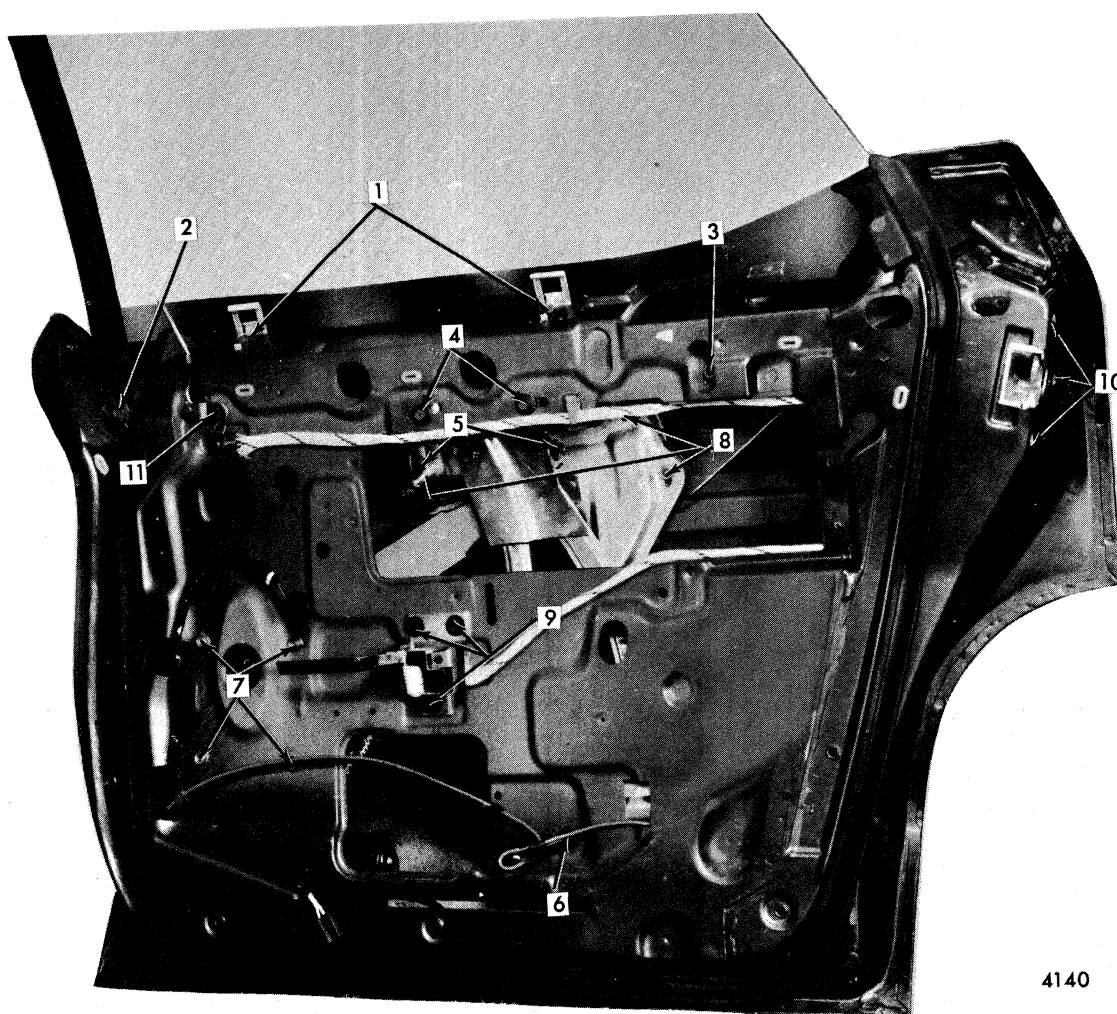
- | | | | |
|---|---|--|--|
| 1. Locking Rod Bell
Crank Attaching Nut | 3. Window Regulator
Attaching Rivets | 5. Vent Division Channel
Upper Attaching
Screw | 7. Power Door Lock
Solenoid Attaching
Screws |
| 2. Vent Division Channel
Attaching Screw | 4. Inner Panel Cam
Attaching Screws | 6. Vent Division Channel
Lower Attaching
Screw | 8. Inside Remote Handle
Attaching Screws |



4746

Fig. 5-131-Rear Door Hardware - "B and C-39 and 49" Styles

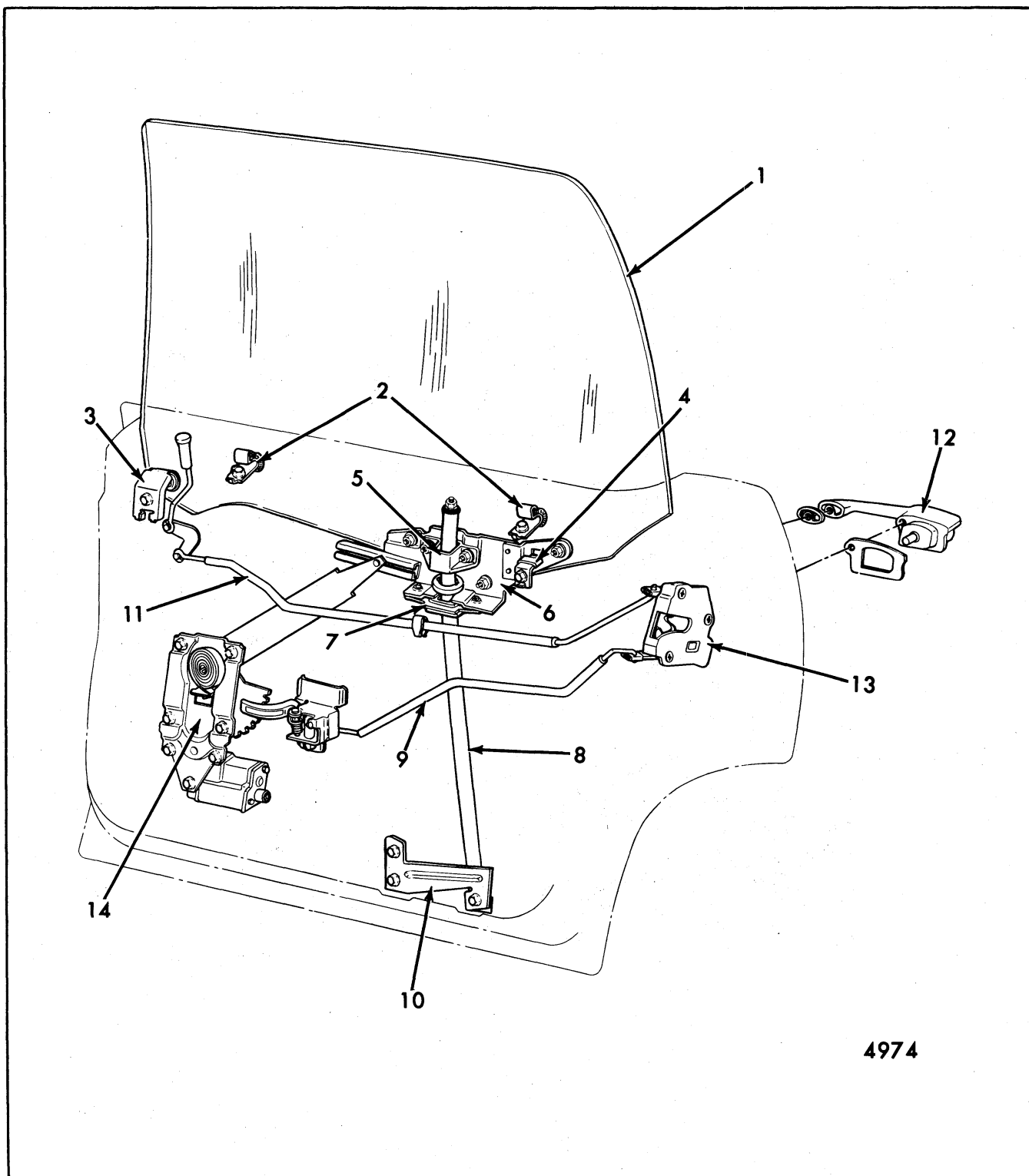
- | | | | |
|-------------------------|-----------------------|----------------------|-------------------------|
| 1. Window Assembly | 5. Inside Locking Rod | 9. Window Regulator | 12. Inside Handle to |
| 2. Belt Trim Support | 6. Lower Sash Guide | 10. Window Regulator | Lock Connecting Rod |
| 3. Front Up-Travel Stop | 7. Guide Cam Support | 11. Inside Remote | 13. Lock Assembly |
| 4. Rear Up-Travel Stop | 8. Guide Cam | Handle | 14. Door Outside Handle |



4140

Fig. 5-132-Rear Door Hardware Attachments - "B and C-39 and 49" Styles

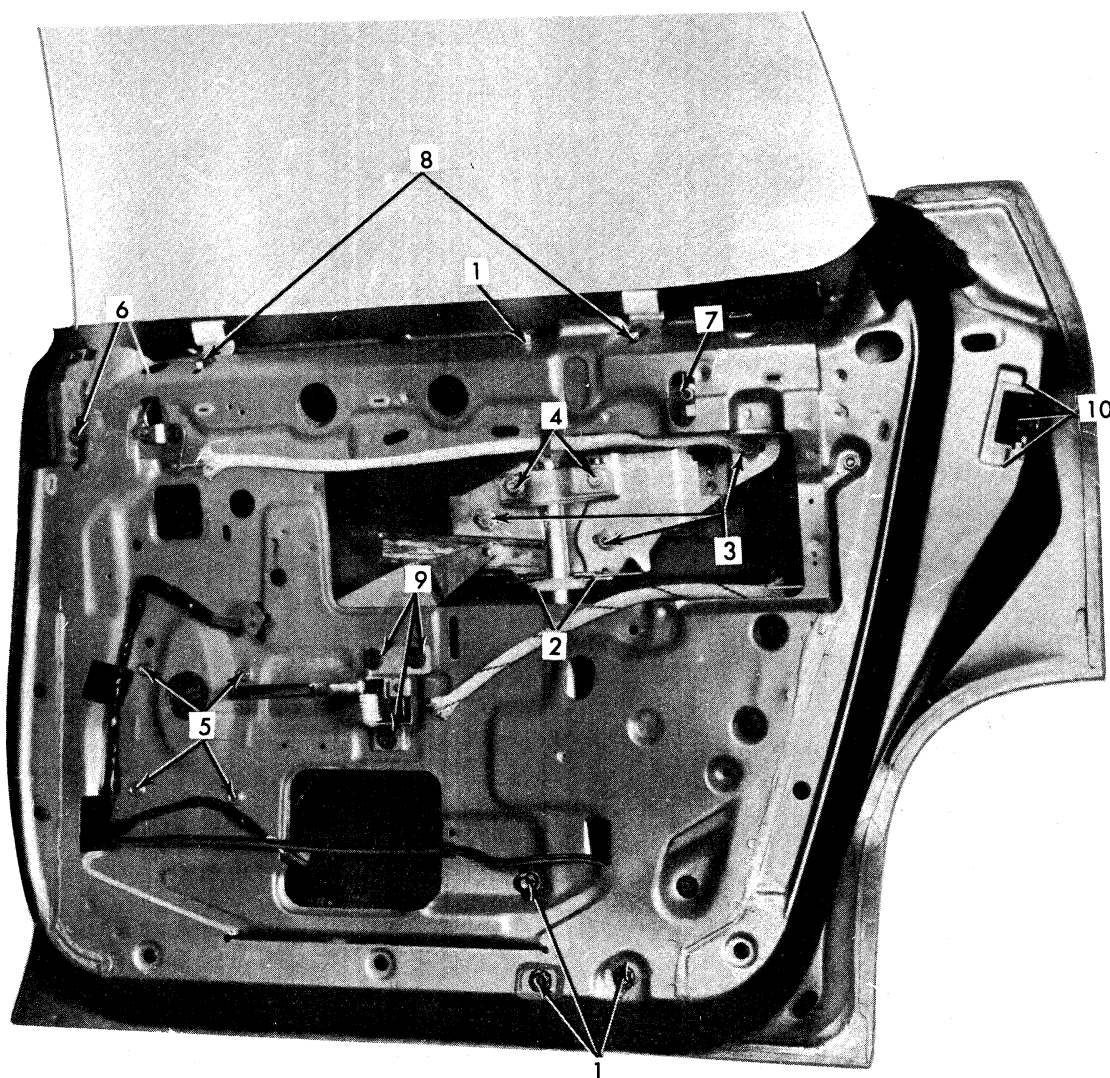
- | | | | |
|--------------------------------------|--|----------------------------------|----------------------------------|
| 1. Belt Trim Support Retainer Screws | 4. Guide Cam Support to Inner Panel Screws | 7. Window Regulator Rivets | 9. Inside Remote Handle Screws |
| 2. Front Up-Travel Stop Screw | 5. Guide Cam to Guide Cam Support Screws | 8. Lower Sash Guide Plate Screws | 10. Door Lock Screws |
| 3. Rear Up-Travel Stop Screw | 6. Guide Cam Lower Screw | | 11. Locking Rod Bell Crank Screw |



4974

Fig. 5-133-Rear Door Hardware - "6CB69" Style

- | | | | |
|--------------------------------|---------------------------|---|------------------------|
| 1. Window Assembly | 5. Lower Sash Upper Guide | 8. Window Guide Tube | 11. Inside Locking Rod |
| 2. Belt Trim Support Retainers | 6. Lower Sash Guide Plate | 9. Inside Handle to Lock Connecting Rod | 12. Outside Handle |
| 3. Front Up-Travel Stop | 7. Lower Sash Lower Guide | 10. Guide Tube Lower Attaching Bracket | 13. Door Lock |
| 4. Rear Up-Travel Stop | | | 14. Window Regulator |



4975

Fig. 5-134-Rear Door Hardware Attachments - "6CB69" Style

- | | | | |
|----------------------------------|--------------------------------|-------------------------------|-------------------------------------|
| 1. Window Guide Tube Screws | 4. Lower Sash Upper Guide Nuts | 6. Front Up-Travel Stop Screw | 8. Belt Trim Support Retainer Screw |
| 2. Lower Sash Lower Guide Screws | 5. Window Regulator Rivets | 7. Rear Up-Travel Stop Screw | 9. Inside Handle Screws |
| 3. Lower Sash Guide Plate Nuts | | | 10. Door Lock Screws |

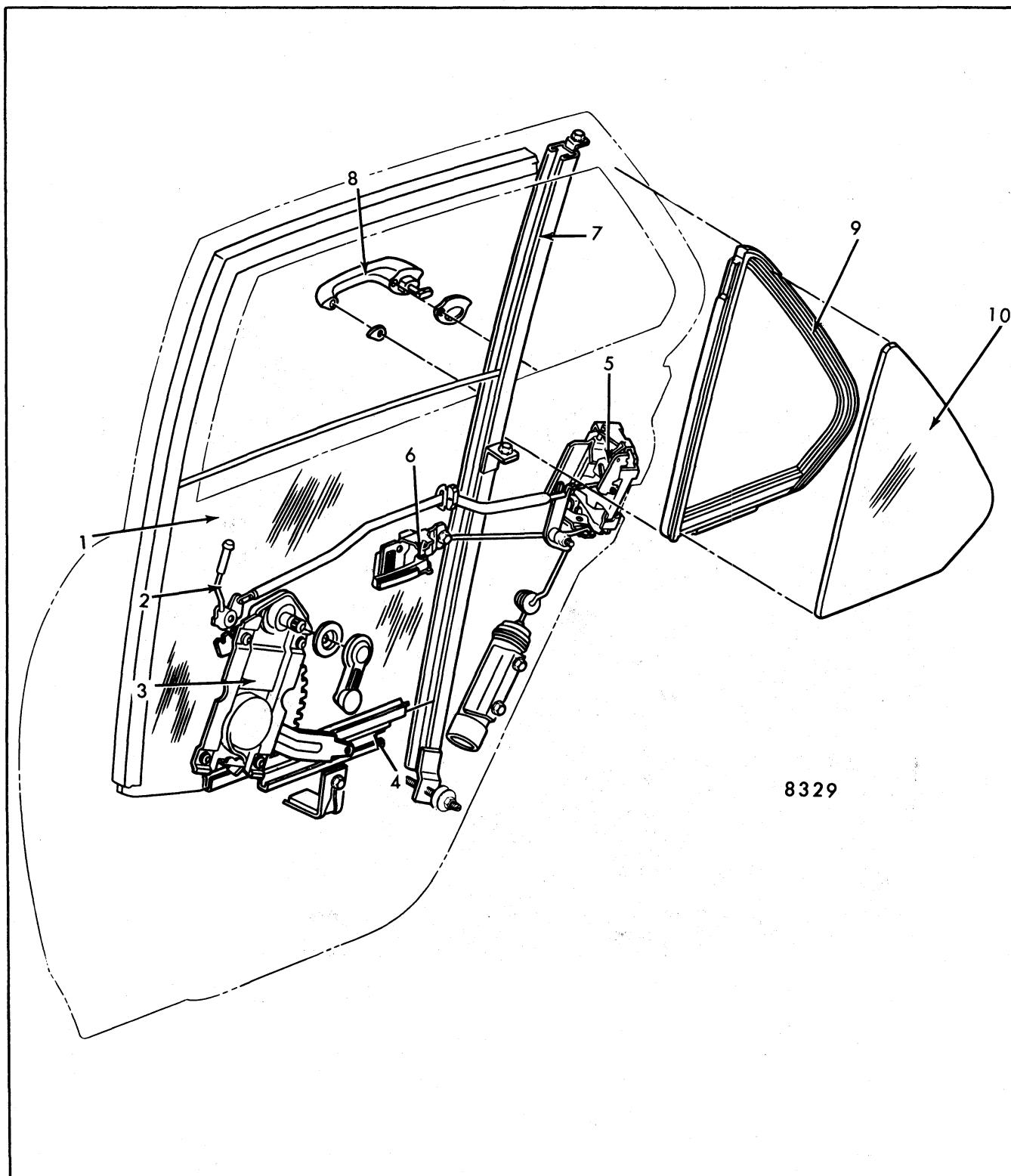


Fig. 5-135-Rear Door Hardware - "X-69" Styles

1. Window Assembly
2. Inside Locking Rod
3. Window Regulator

4. Lower Sash Channel
5. Door Lock

6. Inside Remote Handle
7. Vent Division Channel
8. Outside Handle

9. Stationary Vent Glass
Rubber Channel
10. Stationary Vent Glass

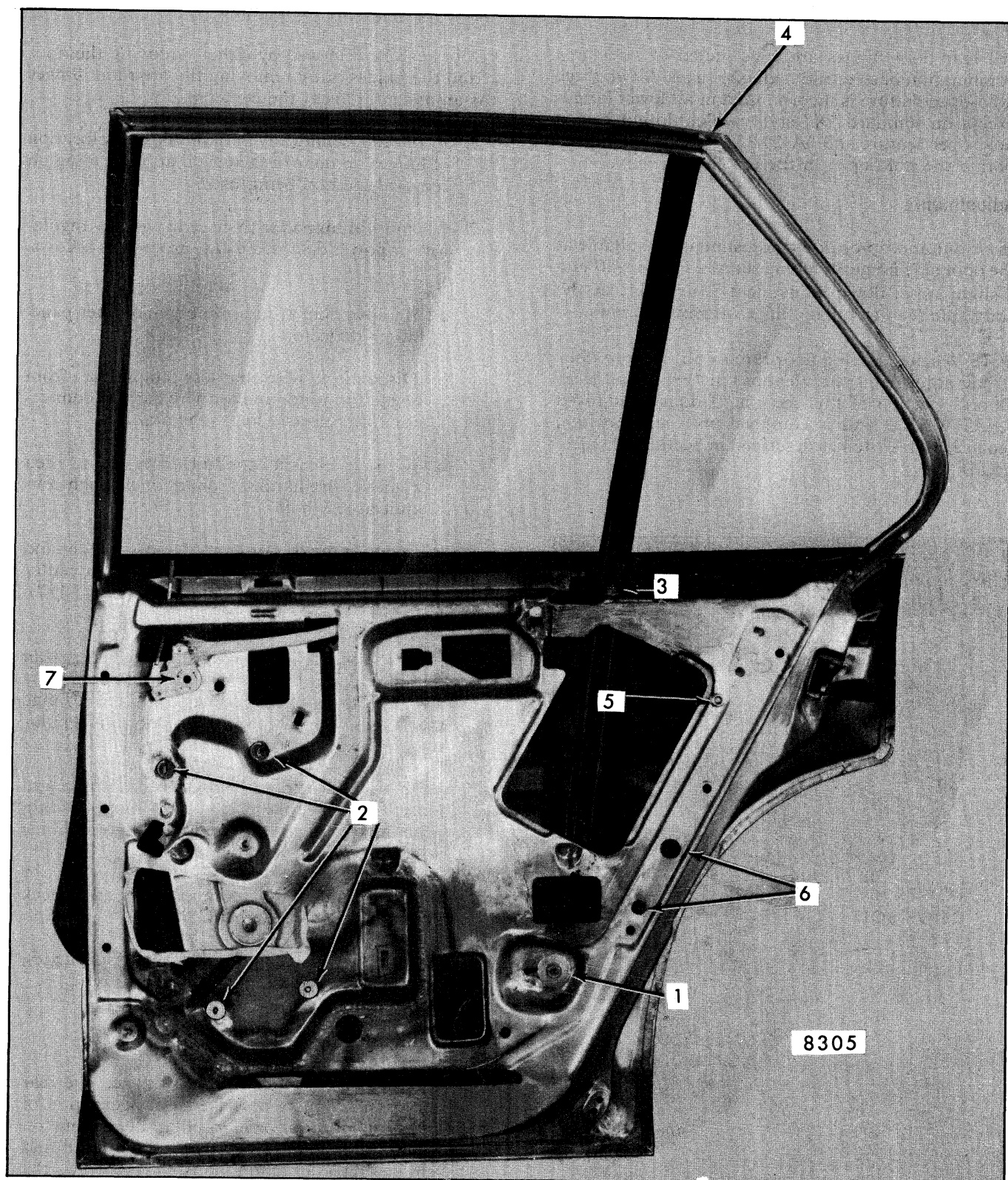


Fig. 5-136-Rear Door Hardware Attachments - "X-69" Style

- | | | | |
|--|--|--|--|
| 1. Vent Division Channel
Lower Adjusting Stud | 3. Vent Division Channel
Attaching Screw | 5. Solenoid Locking Rod
Bell Crank Attaching
Nut | 6. Power Door Lock
Solenoid Attaching
Screws |
| 2. Window Regulator
Attaching Rivets | 4. Vent Division Channel
Upper Attaching
Screw | | 7. Locking Rod Bell
Crank Assembly |

REAR DOOR HINGES

All rear door hinges are constructed of steel or a combination of steel and malleable iron. A two stage hold-open feature is incorporated in all lower hinges except on standard "X" styles which do not have a hold-open feature and "A-29,35" styles which incorporate the hold-open in the upper hinge.

Adjustments

In-or-out and up-or-down adjustment is available at the door side hinge attaching screws. Fore-or-aft and a slight up-or-down adjustment is available at the body side (center pillar) hinge attaching screws.

NOTE: When adjusting door fore or aft, refer to door striker adjustment specifications in "Front and Rear Doors" portion of this section. If door is adjusted REARWARD and is equipped with jamb switch, replace jamb switch as described in Section 10 (Electrical).

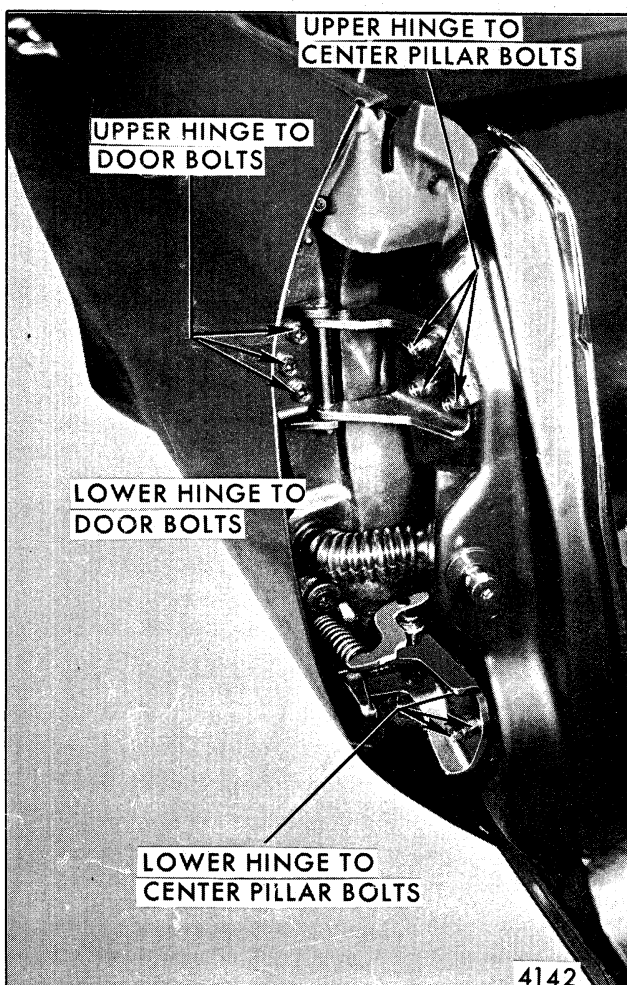


Fig. 5-137-Typical Rear Door Hinge Installation

Door Removal and Installation

Doors can be removed by either removing the door from the hinges or by removing the door and hinges as an assembly from the center pillar.

1. Prior to loosening any hinge bolts, mark location of hinges on door or center pillar, depending on removal method being used.
2. On styles equipped with electric window regulators or power operated locks, proceed as follows:
 - a. Remove door trim assembly and inner panel water deflector.
 - b. Disconnect wire harness connector from regulator motor and/or wire harness connector from electric lock solenoid.
 - c. Remove electric conduit from door, then remove wire harness from door through conduit access hole.
3. With door properly supported, loosen upper and lower hinge attaching bolts from door or center pillar and remove door from body (Fig. 5-137).
4. Prior to reinstalling the door to the body, clean off old sealer at hinge attaching areas and apply a coat of heavy-bodied sealer to surface of hinge that mates with center pillar or door hinge pillar to prevent corrosion.
5. With aid of a helper, lift door into position and loosely install hinge bolts. Align hinges within pencil marks previously made and tighten hinge attachments.
6. Install all previously removed parts and check door for proper alignment.

NOTE: When replacing or adjusting door hinges, torque bolts to 14 to 22 foot-pounds.

Hinge Removal and Installation

1. If both hinges are to be removed, remove rear door as previously described. Mark position of hinge on door or center pillar depending on which door removal method was used and remove hinge attaching bolts.
2. With door properly supported, remove upper or lower hinge to door and center pillar attaching bolts and remove hinge from door.
3. To install, reverse removal procedure. Apply a

coat of heavy-bodied sealer to surface of hinge that mates with the center pillar and door hinge pillar to prevent corrosion. Adjust door as required.

NOTE: When replacing or adjusting door hinges, torque bolts to 14 to 22 foot-pounds.

INSIDE REMOTE HANDLE

Removal and Installation

1. Remove rear door trim assembly (upper and lower portion on "A, B and C" styles) and inner panel water deflector.
2. Remove inside handle attaching screws. If handle is rivet attached, punch out rivet center pin, then drill out rivet with 3/16" drill bit.
3. Disengage handle from lock connecting rod and remove handle from door.
4. To install, reverse removal procedure. Make certain anti-rattle clip on lock connecting rod is properly positioned. If replacement handle is designed for rivet attachment, use steel pop rivet, 3/16" dia. x 5/16" length (USM Part No. SD-62BS or equivalent).

REAR DOOR LOCK

All styles use the fork bolt lock design which includes a safety interlock feature. Where necessary, striker spacers should be used to insure satisfactory lock striker engagement. Refer to "Front and Rear Door" section for spacer usage.

Rear doors can be locked from the inside by depressing the lock button located on the upper door panel. Doors can be locked from the outside by simply depressing the interior lock button and closing the door.

Figures 5-138 and 5-139 depict typical rear door locks for the "X" and "A, B and C" styles, respectively. These illustrations are to be used only for identifying locking problems.

CAUTION: Do not attempt to repair lock discrepancies. Make corrections by replacing the lock.

Removal and Installation - All Except "B-69" Styles

1. Remove door trim assembly on "X" styles, (upper portion of door trim assembly on "A, B and

"C" styles) as previously described in the "Door Trim" portion of this section and operate glass to full-up position.

2. Working through access hole, disengage lock connecting rods from spring clips on door lock (for clip disengagement refer to "Spring Clips" in Front and Rear Door Section).

NOTE: On "X-69" styles, to disengage locking rod to lock spring clips, work through trim pad clip hole.

3. Remove door lock attaching screws and remove lock from door.
4. To install, reverse removal procedure. Torque door lock attaching screws to 80 to 100 inch-pounds.

Removal and Installation - "B-69" Styles

1. Remove upper and lower door trim assembly and water deflector.
2. Working through the access hole, disengage the inside handle connecting rod from spring clip on door lock (for clip disengagement refer to "Spring Clips" in "Front and Rear Door" portion of this section).
3. If power door locks are installed, remove solenoid and bell crank as an assembly.
4. Remove stationary vent division channel.
5. Remove door lock with inside locking rod attached.
6. To install, align lock lever onto lift bar handle rod (Chevrolet and Pontiac) and reinstall.

REAR DOOR WINDOW ASSEMBLY - "A-29, 35" Styles

The rear door window assembly consists of a frameless solid tempered safety plate glass window with a bolted-on lower sash guide plate assembly, which operates on a single vertical guide tube located in the center of the door.

Figure 5-140 is an exploded view of the window assembly and identifies the various components and their sequence of assembly.

NOTE: When replacing a window assembly, install new glass spacers and washers ("4" and "5", Fig. 5-140) and torque glass component attaching nuts to 72 inch-pounds (6 foot-pounds).

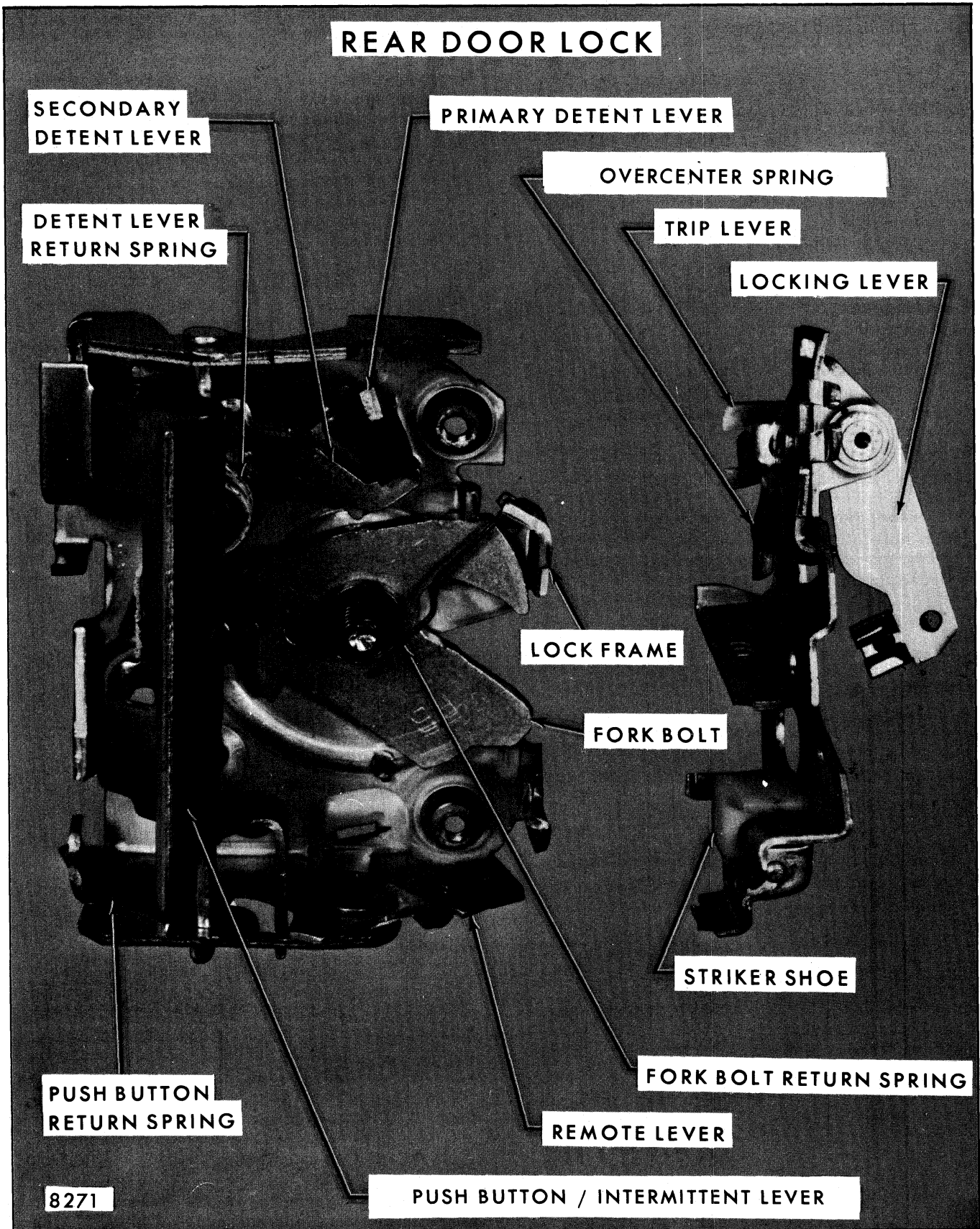
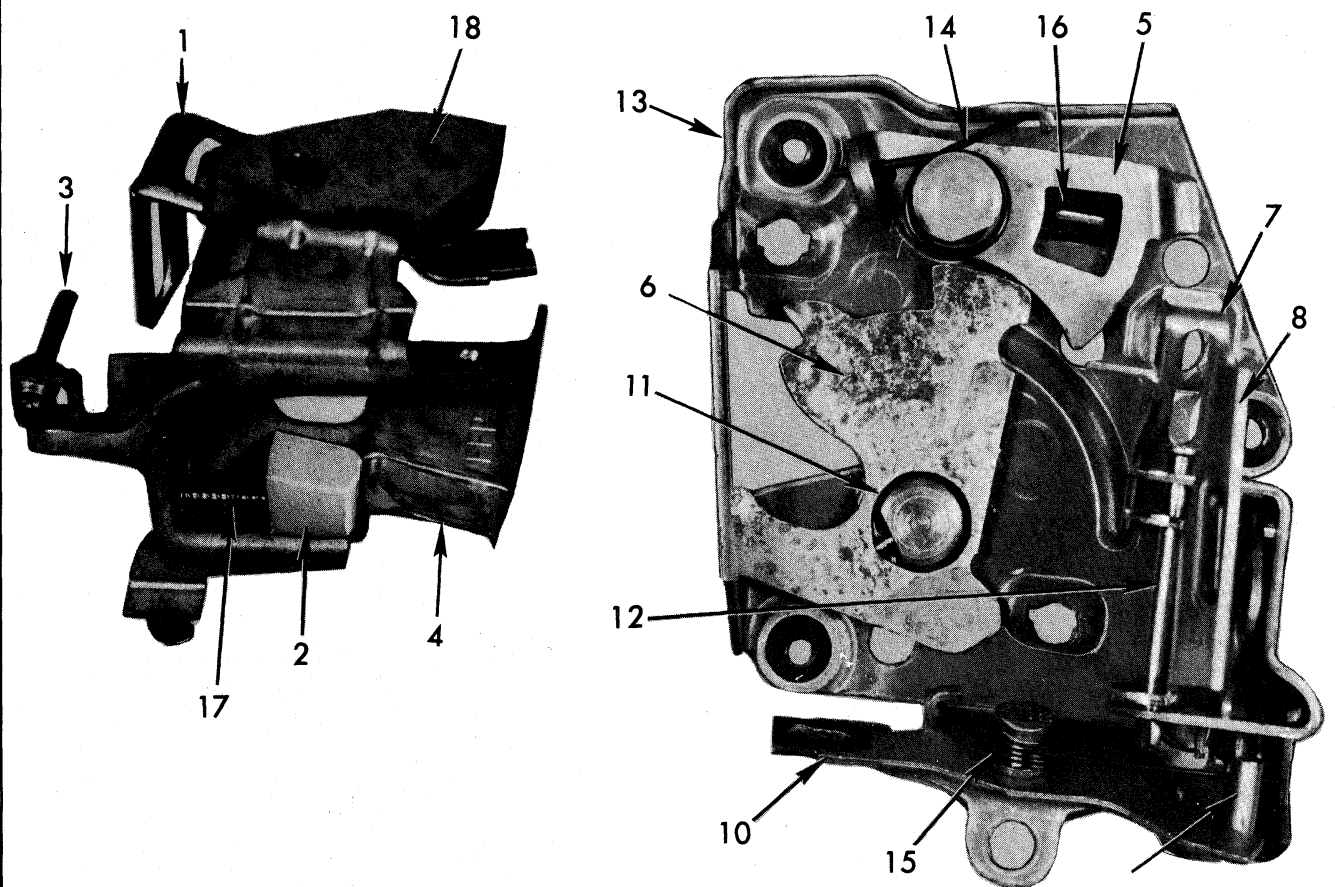


Fig. 5-138-Rear Door Lock - "X" Styles



4552

Fig. 5-139-Rear Door Lock - "A, B, and C" Styles

- | | | | |
|---------------------------|--------------------------|--|---------------------------------|
| 1. Locking Lever | 7. Intermittent Lever | 11. Spring Tension Washer (Replaces Fork Bolt Return Spring) | 15. Push Button Return Spring |
| 2. Sliding Shoe | 8. Push Button Lever | 12. Push Button Pin | 16. Lock Silencer |
| 3. Intermittent Guide Pin | 9. Transfer Lever | 13. Lock Frame | 17. Sliding Shoe Pin and Spring |
| 4. Lock Back Plate | 10. Remote Control Lever | 14. Detent Return Spring | 18. Overcenter Spring |

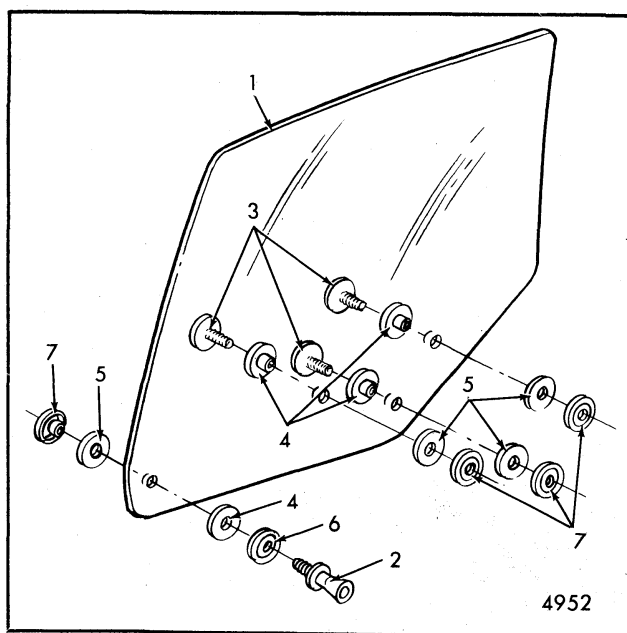


Fig. 5-140-Rear Door Window Assembly - "A-29, 35" Styles

- | | |
|-------------------|---------------------|
| 1. Window Glass | 5. Washer (Plastic) |
| 2. Up-Travel Stop | 6. Washer (Metal) |
| 3. Bolt | 7. Nut |
| 4. Spacer | |

Diagnosis and Adjustment

- WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("2" and "3", Fig. 5-141) and lower sash upper guide ("4", Fig. 5-141). Position glass with upper edge parallel with side roof rail weatherstrip. Then tighten lower sash upper guide attaching nuts and raise glass to establish proper contact with side roof rail weatherstrip. Torque up-travel stop attachments to 60 to 90 inch-pounds. Torque lower sash upper guide attaching nuts to 72 inch- pounds.
- WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE** - Loosen belt trim support retainers ("1", Fig. 5-141) and lower sash lower guide ("5", Fig. 5-141) and position glass inboard or outboard as required. Outboard adjustment of the lower guide moves the upper edge of the glass inboard. Conversely, inboard adjustment moves the upper edge of the glass outboard. With glass in a full-up position, reposition belt trim support retainers against inner surface of glass sufficiently to stabilize glass, but not restrict operation. Torque previously loosened attaching components to 60 to 90 inch-pounds.

- WINDOW TOO HIGH OR LOW IN UP POSITION** - Loosen front and rear up-travel stops ("2" and "3", Fig. 5-141) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Then torque up-travel stop screws to 60 to 90 inch-pounds.
- WINDOW TOO FAR FORWARD OR REARWARD** - Loosen lower sash channel guide plate attaching nuts ("6", Fig. 5-141) and reposition glass as necessary. Torque guide plate attaching nuts to 72 inch- pounds.
- WINDOW MECHANISM BINDS WHEN OPERATING** - Ease of window operation and window stability depend to a great extent on belt trim support retainers ("1", Fig. 5-141). The support retainers should contact the glass throughout the full cycle of the window. Due to slight variations in glass contour, however, in some cases the strip may lose contact with the glass half-way through the cycle. This is permissible provided it does not result in loose glass. Contact should be sufficient to stabilize glass, but not restrict ease of window operation.

Glass Alignment Using Gauge Blocks - "A-29, 35" Styles

On the "A-29,35" styles, the door glass must be properly centered within a "fixed" window opening.

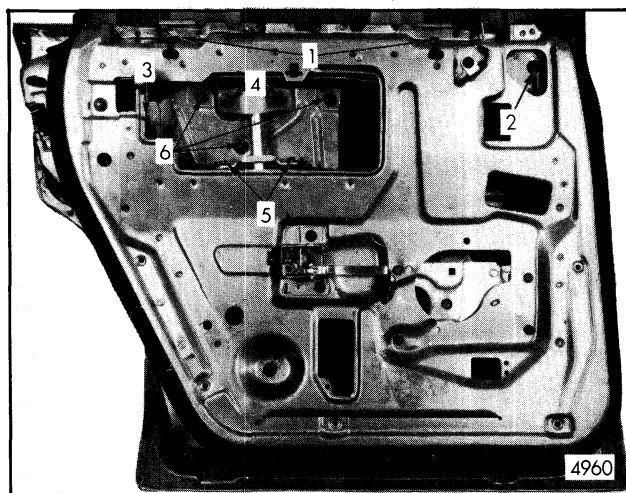


Fig. 5-141-Rear Door Window Removal and Adjustments - "A-29, 35" Styles

- | | |
|--------------------------------------|----------------------------------|
| 1. Belt Trim Support Retainer Screws | 4. Lower Sash Upper Guide Nuts |
| 2. Window Front-Up Travel Stop Screw | 5. Lower Sash Lower Guide Screws |
| 3. Window Rear-Up Travel Stop Screw | 6. Lower Sash Guide Plate Nuts |

To consistently locate the window glass to its specified parallel, in-out, and high-low relationships, glass alignment gauge blocks (tools J-24792 or equivalent) have been designed and released.

The following adjustment procedure outlines proper use of gauge blocks (Fig. 5-100) to obtain the required adjustments.

1. Remove upper portion of door trim assembly as previously described.
 2. Detach the side roof rail weatherstrip at the lower front and rear corners and carefully remove from the retainer.
 3. Lower rear door window and install gauge blocks, tool J-24792 or equivalent (brown), into the side roof rail weatherstrip retainer (handles protruding inboard), above the upper front and rear corners of the glass as shown in Figure 5-142. Partially raise glass and install suction cups on interior surface of glass (Fig. 5-142) to enable adjuster to shift glass when making adjustments with door in a closed position.
- NOTE:** The grooves on the sides of the gauge blocks must be fully engaged with the side roof rail weatherstrip retainer.
4. Working from inside the body, with the door in the closed position, loosen front and rear up-travel stops ("2" and "3", Fig. 5-141) and belt trim support retainers ("1", Fig. 5-141).
 5. Raise the rear door window assembly to approximately 1" from the full-up position as illustrated in Figure 5-142. If the distance (space) between the upper edge of the glass and the front and rear gauge blocks is equal (as shown in Fig.

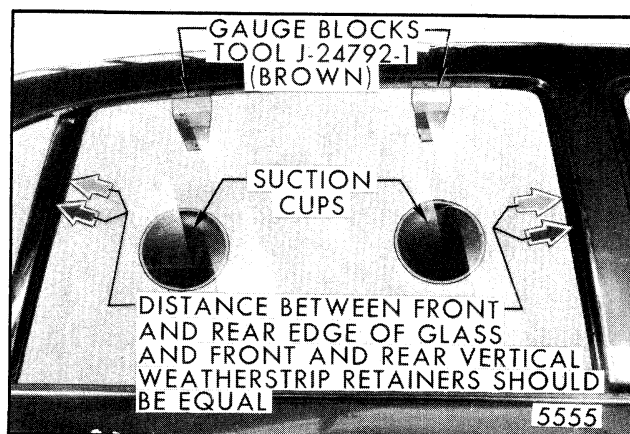


Fig. 5-143-Rear Door Window-Fore and Aft Alignment - "A-29, 35" Styles

5-142), proceed with step 6. If the distance (space) between the upper edge of the glass and both upper gauge blocks is not equal, loosen lower sash upper guide attaching nuts ("4", Fig. 5-141) and adjust glass as necessary.

6. Raise rear door window assembly until contact is established between upper edge of glass and both upper gauge blocks. Determine if the rear door window is centered fore and aft in the window opening. The distance between the front and rear edge of glass and front and rear vertical weatherstrip retainers should be the same as shown in Figure 5-143. If glass is properly positioned, proceed with step 7. If rear door window assembly is not properly centered in its opening, loosen sash guide plate assembly attaching nuts ("6", Fig. 5-141) which control the fore and aft adjustment and move glass forward or rearward as necessary.

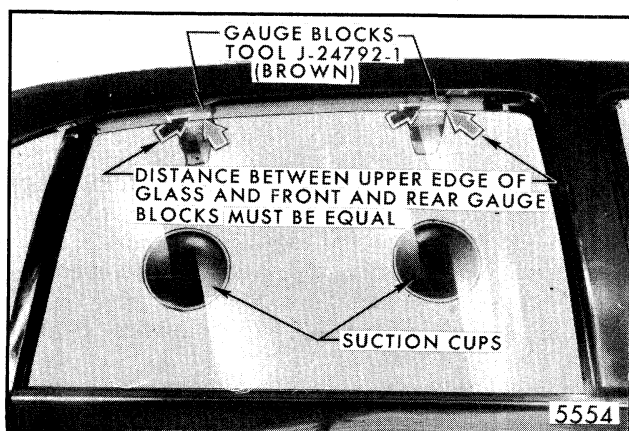


Fig. 5-142-Rear Door Window-Rotated ("Cocked") Glass Alignment - "A-29, 35" Styles

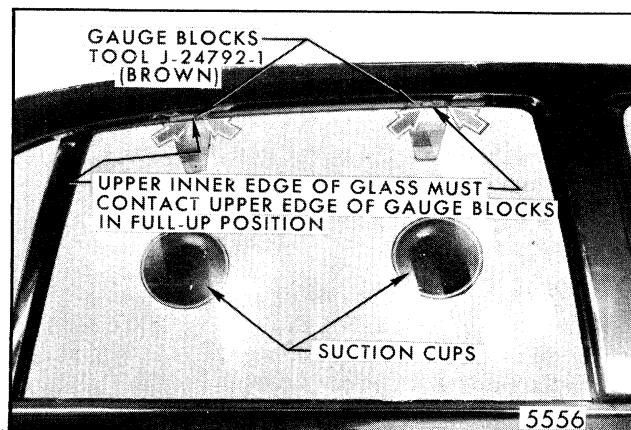


Fig. 5-144-Rear Door Window-In and Out and Up-Travel Alignment - "A-29, 35" Styles

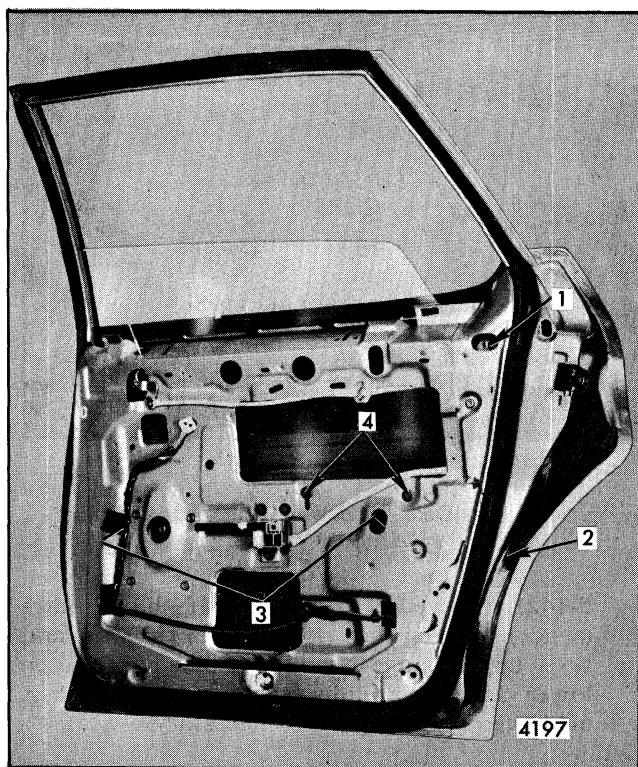


Fig. 5-145-Rear Door Window Removal and Adjustments - "B-35, 45" Styles

- | | |
|---------------------------------------|--|
| 1. Rear Glass Run Channel Upper Screw | 3. Lower Sash Channel Cam Access Holes |
| 2. Rear Glass Run Channel Lower Screw | 4. Inner Panel Cam Screws |

- Loosen lower sash lower guide assembly ("5", Fig. 5-141). Apply firm outboard pressure against the bottom of the lower sash guide plate assembly to remove slack in the system and to hold the upper inner edge of the glass inboard against the outer edge of the gauge blocks as shown in Figure 5-144. Then tighten lower guide attaching screws.

NOTE: Inner surface of glass must contact outer surface of the upper blocks during this adjustment. Excessive outboard pressure can tilt the glass too far inboard at the top resulting in excessive glass to side roof rail weatherstrip contact.

- With the glass in the full-up position against the upper gauge blocks as shown in Figure 5-144 tighten up-travel stops and adjust belt trim support retainers for proper tension against glass.
- Torque the up-travel stop, belt trim support retainer and lower sash lower guide attaching screws to 60 to 90 inch-pounds. Torque the lower sash upper guide and lower sash guide

plate assembly attaching nuts to 72 inch-pounds (6 foot-pounds).

- Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and seal weatherstrip as previously described.
- Reinstall upper portion of door trim assembly.

Removal and Installation - "A-29, 35" Styles

- Remove upper portion of door trim pad.
- Remove front and rear up-travel stops ("2" and "3", Fig. 5-141) and belt trim support retainers ("1", Fig. 5-141).
- Raise window to within two inches of a full-up position and remove lower sash guide plate assembly to glass attaching nuts ("6", Fig. 5-141).
- Tilt upper edge of glass inboard to disengage glass from sash plate, then remove the window by lifting straight up.
- To install, reverse removal procedure. Adjust window for proper alignment and operation as previously described. Torque previously removed hardware component attaching screws to 60 to 90 inch-pounds and sash guide plate assembly attaching nuts to 72 inch-pounds.

REAR DOOR WINDOW ASSEMBLY - "B" Closed Styles

The rear door window assembly consists of a frameless solid tempered safety plate glass window and a bolt-on lower sash channel cam which is removed in the process of removing the window. When handling window, make certain glass does not develop edge chips or deep scratches which could cause glass to shatter.

Adjustments

Adjustments have been provided to relieve a binding door glass due to misalignment of the glass run channel on "B-35,45" styles ("1" and "2" Fig. 5-145). The inner panel cam is adjustable and , can correct a rotated (cocked) rear door window ("4", Fig. 5-145 for "B-35, 45" styles and "4", Fig. 5-130 for "B-69" Styles).

Removal and Installation

- Remove upper and lower portion of door trim assembly and inner panel water deflector.

2. On "B-35,45" styles, remove rear glass run channel upper and lower attaching screws ("1" and "2", Fig. 5-145) and remove run channel from door.
3. Partially lower rear door window, remove lower sash channel cam to glass attaching stud nuts ("3", Fig. 5-145). Press lower sash channel cam inboard to disengage from attaching studs and lower window regulator to full-down position.
4. On "B-35,45" styles, tilt front edge of glass downward and remove inboard of door upper frame, rear edge first.
5. On "B-69" styles, tilt front edge of glass up at a 45 degree angle and remove outboard of door upper frame. Remove front attaching stud first past door inner panel, then rear attaching stud.
6. To install, reverse removal procedure. Adjust window for proper operation as described in the previous procedure. Torque rear glass run channel attachments to 60 to 90 inch-pounds. Torque lower sash channel cam attaching nuts to 72 inch-pounds.

REAR DOOR WINDOW ASSEMBLY - "B and C-39, 49" Styles

The rear door window assembly consists of a solid tempered safety plate glass window and a bolted-on lower sash guide plate roller assembly that operates in a double vertical guide assembly located in the center of the door.

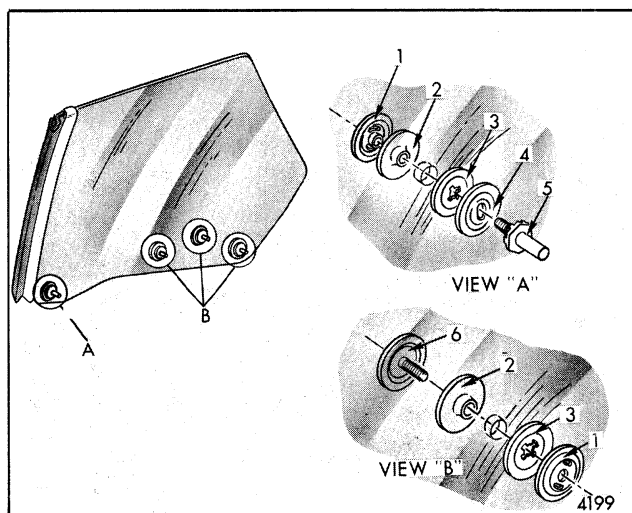


Fig.5-146-Rear Door Window Assembly - "B and C-39, 49" Styles

- | | |
|---------------------|--------------------|
| 1. Tee-Nut | 4. Washer (Metal) |
| 2. Spacers | 5. Stop, Up-Travel |
| 3. Washer (Plastic) | 6. Bolt |

Figure 5-146 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

NOTE: When replacing window assembly, install new glass spacers and washers ("2" and "3", Fig.5-146) and torque glass component attaching nuts to 72 inch-pounds (6 foot-pounds).

Diagnosis and Adjustment

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("2" and "3", Fig.5-147) and lower sash guide plate screws ("7", Fig.5- 147). Position glass with upper edge parallel to side roof rail weatherstrip. Then torque lower sash guide plate screws to 60 to 90 inch-pounds and raise glass to desired height to establish proper contact with side roof rail weatherstrip. Torque up-travel stop screws to 60 to 90 inch-pounds.
2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE** - Loosen upper end of center guide ("5", Fig.5-147) and belt trim support retainers ("1", Fig.5-147) and position guide inboard or outboard as required. Outboard adjustment of guide assembly moves upper edge of glass inboard. Conversely, inboard adjustment moves upper edge of glass outboard. With glass in a full-up position, position trim support retainers against inner surface of glass and torque previously loosened attaching screws to 60 to 90 inch-pounds.
3. **WINDOW TOO HIGH OR LOW IN UP POSITION** - Loosen front and rear up-travel stops ("2" and "3", Fig.5-147) and operate window to desired position to establish proper contact with side roof rail weatherstrip. Torque up-travel stop screws to 60 to 90 inch- pounds.
4. **WINDOW TOO FAR FORWARD OR REARWARD** - Loosen upper center guide support ("4", Fig.5-147) and reposition glass as necessary. Torque guide support attachments to 60 to 90 inch-pounds.
5. **WINDOW MECHANISM BINDS WHEN OPERATING** - Ease of window operation and window stability depends to a great extent on the adjustment of the belt trim support retainers ("1", Fig.5-147). The trim support retainers should contact the glass throughout the full cycle of the window. Due to slight variations in glass contour, however, in some cases the strip may lose contact with the glass half-way

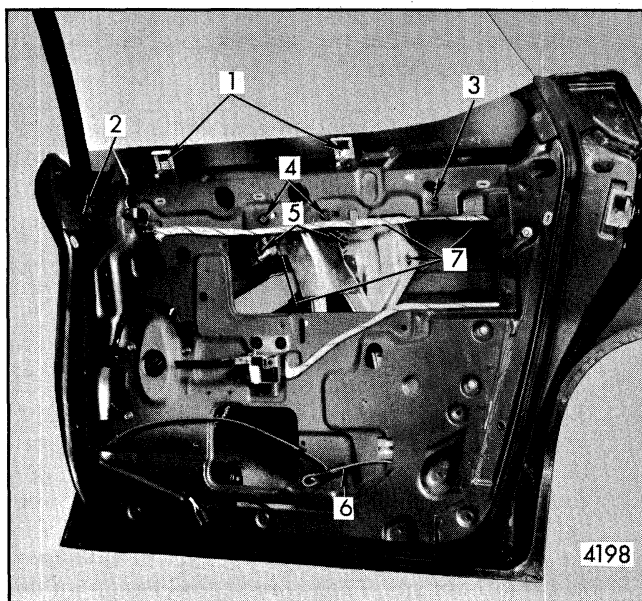


Fig. 5-147-Rear Door Window Removal and Adjustments - "B and C-39, 49" Styles

- | | |
|--------------------------------------|---|
| 1. Belt Trim Support Retainer Screws | 5. Center Guide Cam to Upper Cam Support Screws |
| 2. Window Front Up-Travel Stop Screw | 6. Center Guide Cam Lower Screw |
| 3. Window Rear Up-Travel Stop Screw | 7. Lower Sash Guide Plate Stud Nuts |
| 4. Center Guide Cam Support Screws | |

through the cycle. This is permissible provided it does not result in loose glass. Contact should be sufficient to stabilize glass, but not restrict ease of window operation.

Glass Alignment Using Gauge Blocks - "B and C-39, 49" Styles

To facilitate adjustment of this glass and to insure that glass alignments within specifications are consistently performed, glass alignment gauge blocks, tool J-23711 or equivalent (Fig. 5- 148) should be used. For proper use of gauge blocks, refer to the following procedure.

NOTE: Be sure front door window is properly aligned prior to aligning rear door window.

1. Remove upper portion of door trim assembly as previously described.
2. Detach the side roof rail weatherstrip at the lower rear corner (screw retained at rear edge) and carefully remove from the retainer over the door window as shown in Figure 5-149.

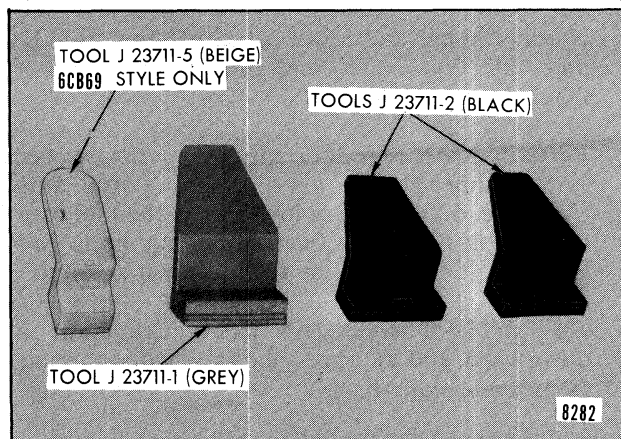


Fig. 5-148-Glass Alignment Gauge Blocks, Tool J-23711 or Equivalent

3. Lower front and rear door windows and install gauge blocks, tool J-23711-2 (black), or equivalent into the side roof rail weatherstrip retainer above the upper front and rear corners of the glass, as shown in Figure 5-149.

NOTE: The grooves on the sides of the gauge blocks must be fully engaged with the side roof rail weatherstrip retainer.

4. Working from inside the body with the door in the closed position, loosen front and rear up-travel stops ("2" and "3" Fig. 5-147) and belt trim support retainers ("1", Fig. 5-147).
5. Raise the rear door window until contact is established between upper edge of glass and one or more of the two gauge blocks.

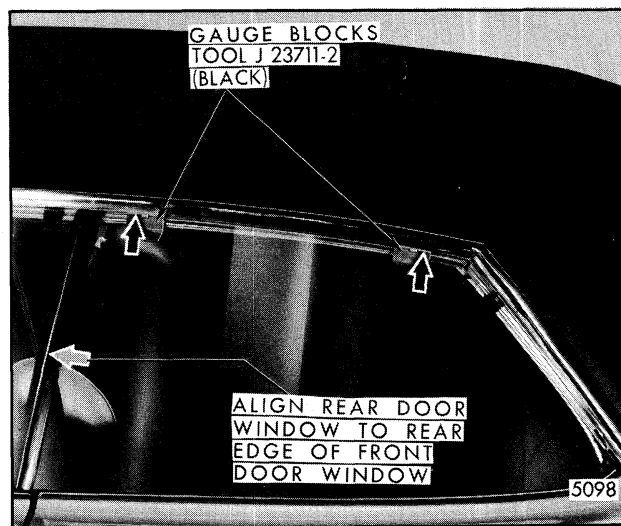


Fig. 5-149-Rear Door Window Alignment - "B and C-39, 49" Styles

If upper edge of glass contacts both gauge blocks simultaneously (refer to Fig. 5-149), proceed with step 6.

If upper edge of glass does not contact both blocks simultaneously, completely loosen lower sash guide plate stud nuts ("7", Fig. 5-147) and manipulate the glass until the upper edge of glass contacts both blocks in the full-up position. Tighten guide plate stud nuts.

6. Raise rear door window until contact is established between upper edge of glass and both upper gauge blocks. Raise front door window. If the front edge of the rear door window is properly positioned in relation to front door window, as shown in Figure 5-149, proceed with step 7. If rear door window is not properly positioned loosen fore and aft adjustment on guide cam support ("4", Fig. 5-147) and move glass forward or rearward as necessary.
 7. Completely loosen upper end of (center) guide cam support ("5", Fig. 5-147). Apply firm outboard pressure against the upper end of the guide cam to remove slack in the system and to hold the upper inner edge of the glass inboard against the outer edge of the gauge blocks as shown in Figure 5-149. Then tighten (center) guide cam support attaching screws.
- NOTE:** Inner surface of glass must contact outer surface of the upper blocks during this adjustment.
8. With the glass in the full-up position against the upper gauge blocks, tighten up-travel stops and adjust belt trim support retainers for proper tension against glass.
 9. Torque all previously loosened hardware attaching screws to 60 to 90 inch-pounds. Torque the guide plate stud nuts to 72 inch-pounds.
 10. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and seal weatherstrip with a pumpable sealer. Reinstall upper portion of door trim assembly.

Removal and Installation - "B and C-39, 49" Styles

1. Remove upper portion of door trim assembly as previously described.
2. With glass in a partially down position, loosen front and rear window belt trim support retainers ("1", Fig. 5-147) and up-travel stops ("2" and "3", Fig. 5-147). Then rotate the stops sufficiently to allow glass to bypass stops when removing window.

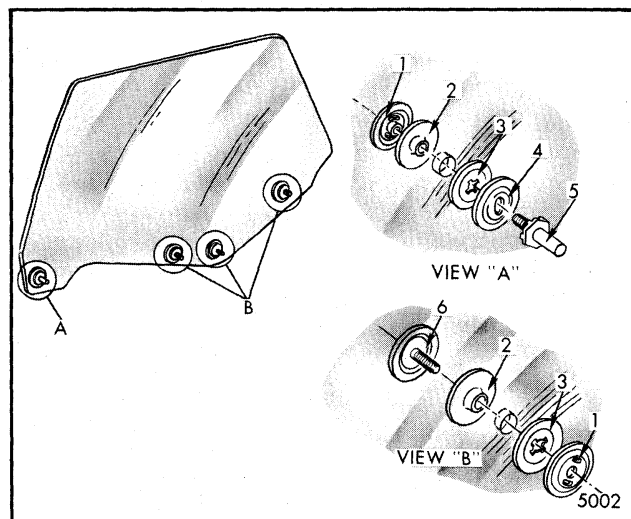


Fig. 5-150-Rear Door Window Assembly - "6CB69" Styles

- | | |
|---------------------|-------------------|
| 1. Tee-Nut | 4. Washer (Metal) |
| 2. Spacer | 5. Up-Travel Stop |
| 3. Washer (Plastic) | 6. Bolt |

3. With window in a partially-down position, remove lower sash guide plate to glass attaching stud nuts ("7", Fig. 5-147), then tilt upper edge of glass inboard to disengage guide plate from studs on glass. Remove glass from door by lifting rear edge of glass upward, then slide glass rearward to align guide plate studs with notch provided at rear of door inner panel.
4. To install, reverse removal procedure. Torque trim support retainer and up-travel stop attachments to 60 to 90 inch-pounds. Torque sash guide plate to glass attaching nuts to 72 inch-pounds. Adjust for proper window alignment and operation as described previously.

REAR DOOR WINDOW ASSEMBLY - "6CB69" Style

The rear door window assembly consists of a solid tempered safety plate glass window with a bolted-on lower sash guide plate assembly which operates on a single vertical guide tube located in the center of the door.

Figure 5-150 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

NOTE: When replacing window assembly, install new glass spacers and washers ("2" and "3", Fig. 5-150) and torque glass components attaching nuts to 72 inch-pounds (6 foot-pounds).

Diagnosis and Adjustments

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("2" and "3", Fig. 5-151) and lower sash upper guide ("5", Fig. 5-151). Position glass with upper edge parallel to side roof rail weatherstrip. Then tighten lower sash upper guide attaching nuts to 72 inch-pounds and raise glass to establish proper contact with side roof rail weatherstrip. Torque up-travel stop screws to 60 to 90 inch-pounds.
2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE** - Loosen belt trim support retainers ("1", Fig. 5-151) and lower sash lower guide ("6", Fig. 5-151) and position glass inboard or outboard as required. Outboard adjustment of lower guide moves upper edge of glass inboard. Conversely, inboard adjustment moves upper edge of glass outboard. With glass in a full-up position, move trim support retainers against inner surface of glass. Torque previously loosened attachments to 60 to 90 inch-pounds.
3. **WINDOW TOO HIGH OR LOW IN UP POSITION** - Loosen front and rear up-travel stops

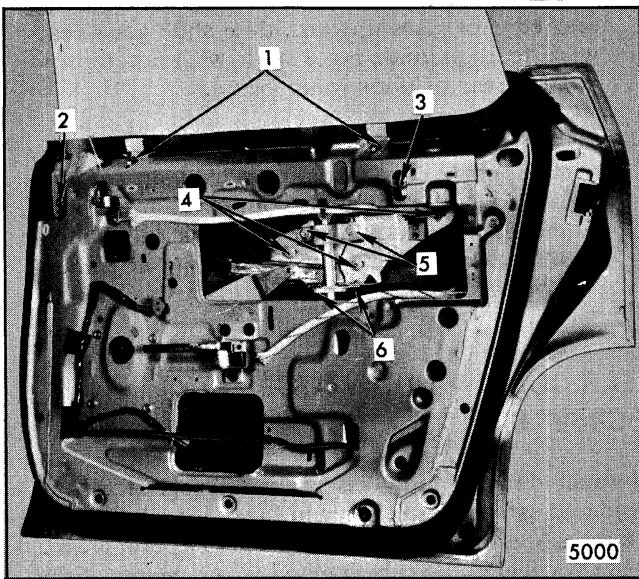


Fig. 5-151-Rear Door Window Removal and Adjustment - "6CB69" Styles

- | | |
|--------------------------------------|---|
| 1. Belt Trim Support Retainer Screws | 4. Lower Sash Guide Plate to Glass Attaching Nuts |
| 2. Front Up-Travel Stop Screw | 5. Lower Sash Upper Guide Screws |
| 3. Rear Up-Travel Stop Screw | 6. Lower Sash Lower Guide Screws |

("2" and "3", Fig. 5-151) and operate window to desired position to establish proper contact with side roof rail weatherstrip. Torque up-travel stop screws to 60 to 90 inch- pounds.

4. **WINDOW TOO FAR FORWARD OR REARWARD** - Loosen lower sash channel guide plate attaching nuts ("4", Fig. 5-151) and reposition glass as necessary. Torque attaching nuts to 60 to 90 inch-pounds.
5. **WINDOW MECHANISM BINDS WHEN OPERATING** - Ease of window operation and window stability depend to a great extent on the adjustment of the window belt trim support retainers ("1", Fig. 5- 151). These retainers should contact the glass throughout the full cycle of the window. Due to slight variations in glass contour, however, in some cases the strip may lose contact with the glass halfway through the cycle. This is permissible provided it does not result in loose glass. Contact should be sufficient to stabilize glass, but not restrict ease of window operation. Torque belt trim support retainer attachments to 60 to 90 inch- pounds.

Glass Alignment Using Gauge Blocks - "6CB69" Styles

With incorporation of a single vertical guide tube in the center of the door, most window adjustments will be made from a guide plate attached to the lower edge of the glass. Fine adjustments of this glass are more sensitive than conventional styles utilizing front and rear guides as relatively small movements at adjusting locations will result in large movements at the upper edge of glass.

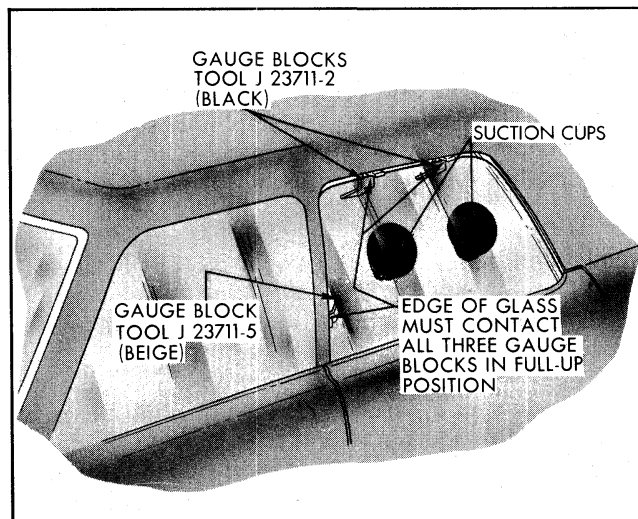


Fig. 5-152-Rear Door Window Alignment - "6CB69" Style

To facilitate adjustment of this glass and to maintain consistent glass alignment to specifications, glass alignment gauge blocks tools J-23711-2 and J-23711-5 or equivalent (Fig. 5-148) should be used. For proper use of gauge blocks refer to the following adjustment procedure.

1. Remove upper portion of door trim assembly and lower inner panel water deflector to gain access to door hardware components.
2. Detach side roof rail weatherstrip at lower front and rear corners and remove from retainer.
3. Lower rear door window and install gauge blocks, tool J-23711-2 (black), or equivalent into the side roof rail weatherstrip retainer above the upper front and rear corners of the glass as shown in Figure 5-152. Then install gauge block, tool J-23711-5 (beige), or equivalent into the center pillar retainer above the beltline. Raise door window and install glass suction cups on interior surface of glass to enable adjuster to shift glass when making adjustments with door in a closed position (Fig. 5-152).

NOTE: The grooves on the sides of the gauge blocks must be fully engaged with the weatherstrip retainer.

4. Working from inside the body with the door in the closed position, loosen front and rear up-travel stops ("2" and "3", Fig. 5-151) and belt trim support retainers ("1", Fig. 5-151).
5. Raise door window assembly until contact is established between the upper and/or forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contact all three gauge blocks simultaneously (as shown in Fig. 5-152), proceed with step 6. If, however, upper and forward edge of glass does not contact all three blocks simultaneously, completely loosen lower sash channel guide plate ("4", Fig. 5-151) and lower sash upper guide assembly ("5", Fig. 5-151) and manipulate the glass by hand until upper and forward edge of glass contacts all three gauge blocks in the full-up position (as shown in Fig. 5-152). Tighten guide plate and upper guide assembly attachments.

6. Loosen lower sash lower guide assembly ("6", Fig. 5-151). Apply firm outboard pressure against the bottom of the lower sash guide plate assembly to remove slack in the system and to hold the upper inner edge of glass inboard against outer edge of gauge blocks. Then tighten lower guide attaching screws.

NOTE: Inner surface of glass must contact outer surface of the upper gauge blocks during this adjustment. Excessive outboard pressure can tilt the glass too far inboard at the top resulting in excessive glass to side roof rail weatherstrip contact.

7. With the glass in the full-up position against the upper gauge blocks as shown in Figure 5-152, tighten adjustable up-travel stops. Adjust belt trim support retainers for proper pressure against glass.
8. Torque the previously loosened belt trim support retainer, up-travel stop and lower sash lower guide attachments to 60 to 90 inch-pounds. Torque the lower sash upper guide and lower sash guide plate assembly attaching nuts to 72 inch-pounds.
9. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and reseal weatherstrip with a pumpable sealer.
10. Reposition inner panel water deflector and reinstall upper portion of trim panel.

Removal and Installation - "6CB69" Style

1. Remove upper portion of door trim assembly as previously described.
2. Loosen belt trim support retainer attachments ("1", Fig. 5-151) and remove front and rear up-travel stops ("2 and 3", Fig. 5-151).
3. Remove lower sash guide plate assembly to glass attaching stud nuts ("4", Fig. 5-151). Tilt upper edge of glass inboard to disengage glass from guide plate, then remove the window from the door by lifting straight-up.
4. To install, reverse removal procedure. Torque previously removed trim support retainer and up-travel stop attachments to 60 to 90 inch-pounds. Torque sash guide plate to glass attaching nuts to 72 inch-pounds. Adjust window for proper alignment as described previously.

REAR DOOR WINDOW ASSEMBLY - "X-69" Style

The rear door window assembly consists of a frameless solid tempered safety plate glass window and a urethane bonded lower sash channel assembly.

NOTE: If lower sash channel removal and/or installation is required, refer to the "Lower Sash Channel Cam" service procedure in the "Front and Rear Doors" portion of this section.

Adjustments

Adjustment has been provided to relieve a binding door glass due to misalignment of the ventilator division channel ("1", Fig. 5-136).

Removal and Installation

1. Remove door trim assembly and inner panel water deflector.
2. Remove rear door window stationary vent assembly as described in next operation.
3. Slide window regulator lift arm roller out of window lower sash channel cam and remove glass inboard of door upper frame.
4. To install, reverse removal procedure. Adjust window for proper operation as previously described.

REAR DOOR STATIONARY VENT DIVISION CHANNEL AND WINDOW - "X-69" Style

The stationary vent division channel is held in place by one division channel to door upper frame attaching screw and one lower adjusting stud and nut. This assembly acts as a rear door window rear glass run channel and also holds the stationary vent window in proper position. The vent glass is set within a rubber channel.

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector sufficiently to gain access to the lower adjusting stud and nut ("1", Fig. 5-136).
2. Remove door window lower stop (rubber bumper) from down stop support bracket on door inner panel. If equipped with power door locks, remove bellcrank and door lock solenoid assembly.
3. Remove ventilator division channel lower adjusting stud and nut ("1", Fig. 5-136).
4. Carefully lower door window and remove divi-

sion channel to door upper frame attaching screw ("4", Fig. 5-136). Remove vent division channel to door inner panel (at belt) attaching screw ("3", Fig. 5-136).

5. Rotate upper section of division channel forward and outboard to clear upper frame.
6. Pull stationary vent glass and rubber channel assembly forward and remove.
7. Complete removal of division channel by lifting outboard of door upper frame.
8. To install, reverse removal procedure. Lubricate vent glass rubber channel with silicone type material to aid in installation. In-or-out and fore-or-aft adjustment of division channel is available at the lower adjusting stud and nut only.

REAR DOOR STATIONARY VENT DIVISION CHANNEL AND WINDOW - "B-69" Style

The stationary vent division channel is held in place by one division channel to door upper frame attaching screw, one lower attaching nut at the door belt and one attaching nut in the rear door lock pillar adjacent to the door lock opening. This assembly acts as a rear door window rear glass run channel and also holds the stationary vent window in proper position. The vent glass is mounted in a rubber channel.

Removal and Installation

1. Remove door trim assembly and water deflector.
2. Lower window to full-down position if vent window only is to be removed.
3. Remove door glass as previously described if division channel is to be removed.
4. Remove stationary vent division channel attaching screws ("2", "5" and "6", Fig. 5-130). Allow channel to drop down and forward.
5. Pull stationary vent glass and rubber channel assembly forward until free of upper frame and remove. Proceed to step 7 if division channel is not to be removed.

NOTE: If door has power door locks, remove lock solenoid and bell crank assembly.

6. Pull glass run channel from vent division channel, lower division channel into door so that

lower part of channel is in the bottom front corner of door. Start top of division channel out at upper rear corner of large access hole and remove division channel.

7. To install, reverse removal procedure. Lubricate stationary vent glass rubber channel with silicone type material to aid in proper installation and seating. Torque attaching screws ("2" and "6", Fig. 5-130) to 60 to 90 inch-pounds.

REAR DOOR WINDOW REGULATOR - Manual - "A-29, 35" Styles

Removal and Installation - Refer to Figure 5-126

1. Remove upper and lower door trim assembly and inner panel water deflector.
2. Raise window to a full-up position and secure in place by positioning rubber door stop wedges between the door glass and inner panel at front and rear of door (Fig. 5-153).
3. Punch out regulator attaching rivet center pins, then drill out rivets with 1/4" drill bit.
4. Disengage regulator lift arm from lower sash guide plate cam and remove window regulator through large access hole, lift arm first.
5. To install, reverse removal procedure. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on

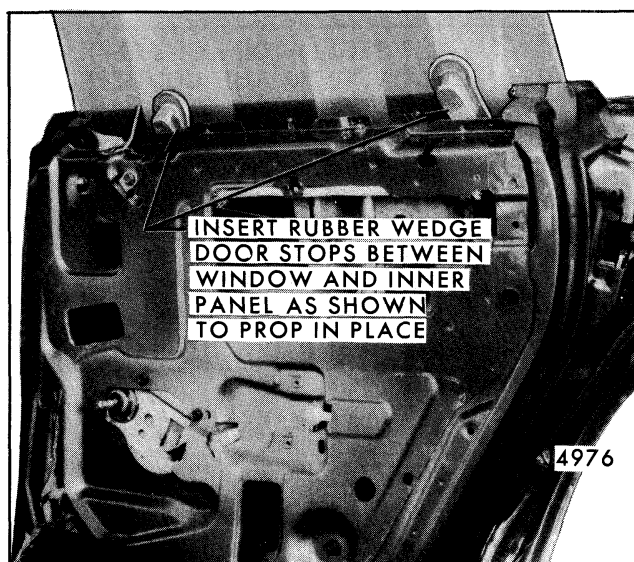


Fig. 5-153-Using Rubber Door Stop Wedges to Prop Window in Place

outboard side of regulator back plate. Attach regulator to inner panel with 1/4 - 20 x 7/16" screws (Part No. 9642853 or equivalent). Torque screws to 72 inch-pounds.

REAR DOOR WINDOW REGULATOR - Electric - "A-29, 35" Styles

Removal and Installation - Refer to Figure 5-126

1. Remove upper and lower door trim assembly and inner panel water deflector.
2. Remove door window as previously described.
3. Remove regulator attaching rivets ("11", Fig. 5-126) as described for manual regulator, then disengage regulator lift arm from sash plate guide cam assembly.
4. Remove upper and lower guide tube assembly attaching screws ("8 and 9", Fig. 5-126), then remove the guide tube and lower sash guide plate assembly from door.
5. Disconnect body wire harness from window regulator at regulator motor, and remove regulator from door, lift arm first.

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTER-BALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE "DOOR WINDOW REGULATOR ELECTRIC MOTOR" REMOVAL AND INSTALLATION PROCEDURE IN THE "FRONT AND REAR DOOR" PORTION OF THIS SECTION.

6. To install, reverse removal procedure. Install replacement regulator with attaching screws and "U" nuts (if necessary) as described for manual regulator. Torque upper and lower guide tube attaching screws to 60 to 90 inch-pounds. Torque regulator attaching screws and lower sash plate to glass attaching nuts to 72 inch-pounds.

REAR DOOR WINDOW REGULATOR - Manual and Electric - "B-35,45" Styles

Removal and Installation - Refer to Figure 5-128

1. Remove upper and lower portion of door trim

assembly and inner panel water deflector.

2. Lower window to a three-quarter-down position, remove lower sash channel cam to glass attaching stud nuts. While supporting glass, disengage cam from rollers on regulator lift and balance arms and remove cam.

NOTE: Raise window to full-up position and secure in place with pieces of cloth-backed body tape applied over door upper frame.

3. Remove inner panel cam attaching screws.
4. Punch out regulator attaching rivet center pins, then drill out rivets with 1/4" drill bit. Remove regulator through access hole. For electric regulator, disconnect wire harness at regulator motor.
5. To install, reverse removal procedure. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of back plate. Attach regulator to inner panel with 1/4-20 x 7/16" screws (Part No. 9642853 or equivalent). Torque all attachments to 72 inch-pounds.

REAR DOOR WINDOW REGULATOR - Manual and Electric - "B and C- 39, 49" Styles

Removal and Installation - Refer to Figure 5-132

1. Remove upper and lower portion of door trim assembly and inner panel water deflector, as previously described.
2. Remove center guide cam as subsequently described and prop glass in a full-up position by placing rubber door wedge stops between glass and inner panel (at belt) at the front and rear of glass (Fig. 5-153).
3. Punch out regulator rivet center pins then drill out rivets with 1/4" drill bit. Slide regulator lift arm roller out of lower sash channel cam and remove regulator through large access hole. For electric regulator, disconnect wire harness at regulator motor.

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTER-BALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS

REQUIRED, REFER TO THE "DOOR WINDOW REGULATOR ELECTRIC MOTOR" REMOVAL AND INSTALLATION PROCEDURE IN THE "FRONT AND REAR DOOR" PORTION OF THIS SECTION.

4. To install, reverse removal procedure. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of back plate. Attach regulator to inner panel with 1/4-20 x 7/16" screws (Part No. 9642853 or equivalent). Torque all attachments to 72 inch-pounds.

REAR DOOR WINDOW REGULATOR - "6BC69" Style

Removal and Installation - Refer to Figure 5-134

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Punch out regulator rivet center pins, then drill out rivets with 1/4" drill bit. Disengage regulator lift arm roller from lower sash channel cam and prop window in a full-up position (Fig. 5-153). Rotate regulator assembly so that motor portion of regulator assembly comes out first after disconnecting wire harness.

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTER-BALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE "DOOR WINDOW REGULATOR ELECTRIC MOTOR" REMOVAL AND INSTALLATION PROCEDURE IN THE "FRONT AND REAR DOOR" PORTION OF THIS SECTION.

3. To install, reverse removal procedure. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of back plate. Attach regulator to inner panel with 1/4-20 x 7/16" screws (Part No. 9642853 or equivalent). Torque all attachments to 72 inch-pounds.

REAR DOOR WINDOW REGULATOR - Manual and Electric - "B-69" Style

Removal and Installation - Refer to Figure 5-130

1. Remove upper and lower trim panels and inner panel water deflector.
2. Lower window to within 2" of full-down position, insert rubber wedge door stops between window and inner panel at belt as shown in Figure 5-153 and remove lower sash channel cam to glass attaching stud nuts. Disengage cam from rollers on regulator lift and balance arms and remove cam.
3. Manually raise window to full up position and secure in place with door wedge stops or cloth body tape applied over door upper frame.
4. Mark location of attaching screws and remove inner panel cam.
5. Punch out regulator rivet center pins, then drill out rivets with 1/4" drill bit. Rotate regulator 90 degrees and remove through access hole. For electric regulator, disconnect wire harness at regulator motor.
6. To install, reverse removal procedure. If replacement regulator does not have attaching nuts, place "U" nut (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of back plate. Attach regulator to inner panel with 1/4-20 x 7/16" screws (Part No. 9642853 or equivalent). Torque all attachments to 72 inch-pounds.

REAR DOOR WINDOW REGULATOR-Manual and Electric - "X-69" Style

Removal and Installation - Refer to Figure 5-136

1. Remove door trim assembly and inner panel water deflector.
2. Remove inside locking rod to lock connecting link screw ("7", Fig. 5-136) and disconnect locking rod at lock.
3. Operate window to full-up position and secure in place with pieces of cloth-backed body tape applied over door frame.
4. Punch out rivet center pins, then drill out attaching rivets with a 1/4" drill bit. Slide regulator lift arm roller out of lower sash channel cam and remove regulator through large access hole.

5. To install, reverse removal procedure. Place "U" nut (Part No. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of back plate. Attach regulator to inner panel with 1/4-20 x 7/16" screws (Part No. 9642853 or equivalent). Torque all attachments to 72 inch-pounds.

REAR DOOR INNER PANEL CAM - "B-35, 45 and 69" Styles

Removal and Installation

1. Remove upper and lower door trim assembly, mark location and remove inner panel cam attaching screws ("6", Fig. 5-127 or Fig. 5-129). Disengage cam from regulator balance arm roller and remove cam from door through access hole.
2. To install, reverse removal procedure. Adjust cam attaching screws to previously marked location for proper window operation. Correct adjustment of cam will prevent a rotated (cocked) door window.
3. Torque inner panel cam attachments to 60 to 90 inch-pounds.

REAR DOOR WINDOW FRONT VERTICAL SASH CHANNEL - "B and C-39, 49" Styles

The rear window glass on "B and C-39,49" styles has front vertical sash channels which are bonded to the glass with urethane adhesive. In the event that the glass or the vertical sash channel must be replaced, the following procedure may be used.

Removal and Installation

1. Remove the window assembly as previously described in this manual.
2. To remove the sash channel from the door window glass, apply heat from a welding torch with a No. 2 or 3 tip along the length of the channel. Guide tip of torch along inside length of channel for 30 to 60 seconds. After heating, grip with a pair of pliers and remove. If the channel does not pull off easily, repeat heating operation.

WARNING: DURING URETHANE BURN-OUT OPERATION, AVOID DIRECT INHALATION OF FUMES BEING EMITTED.

3. Thoroughly clean the replacement glass. If the original glass is to be used, scrape off all traces of adhesive with a sharp bladed tool. If the original channel is to be used, clamp in vise and burn out remaining urethane adhesive with welding torch.

To remove any remaining adhesive from parts use lacquer thinner. Complete the cleaning operation by rinsing with water.

4. To bond the channel to the door window glass, use a conventional press-on type filler tape.

REAR DOOR WINDOW CENTER GUIDE CAM - "B and C-39, 49" Styles

Removal and Installation

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Prop window in full-up position (Fig. 5-153), remove center guide cam upper and lower attaching screws ("4 and 6", Fig. 5-132).
3. Pull guide downward to disengage from window lower sash guide plate roller assembly. Remove guide through access hole.
4. To install, reverse removal procedure. Torque guide cam upper and lower attaching screws to 60 to 90 inch-pounds. Adjust guide for proper window operation as described in door window adjustment procedure.

REAR DOOR WINDOW GUIDE TUBE - "6CB69" and "A-29, 35" Styles

Removal and Installation

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Support window in full up position using rubber door wedge stops between glass and inner panel (Fig. 5-153).
3. Mark location, and remove lower sash upper and lower guide attachments ("5 and 6", Figure 5-126 for "A" styles; "2 and 4", Figure 5-134 for "6CB69" style).

4. Remove upper and lower guide tube attaching screws ("8 and 9", Figure 5-126 for "A" styles; "1", Figure 5-134 for "6CB69" style). Lower guide tube into door and remove through access hole, upper end first.

5. To install, reverse removal procedure. Align all removed components to their previously marked positions. Torque attaching screws to 60 to 90 inch-pounds, and torque attaching nuts to 72 inch-pounds.

REAR DOOR WINDOW LOWER SASH UPPER AND/OR LOWER GUIDE - "6CB69" and "A-29, 35" Styles

Removal and Installation

1. Remove upper portion of door trim assembly.
2. For removal of lower sash upper and/or lower guide assembly, mark location of attachments, and remove attachments ("2" and/or "4", Figure 5-134 for "6CB69" style; "5" and/or "6", Figure 5-126 for "A-29,35" styles). Then remove guide tube assembly as previously described to completely remove lower sash assembly.
3. To install, reverse removal procedure. Align components to pre-marked locations to insure proper glass alignment. Torque attaching nuts to 72 inch pounds, attaching screws to 60 to 90 inch-pounds.

REAR DOOR WINDOW GLASS RUN CHANNEL - "B and X" Closed Styles

Removal and Installation

1. Remove door window as previously described.
2. With finger pressure, squeeze run channel together and gently pull run channel out of rear door upper frame.
3. To install, reverse removal procedure.

SECTION 6

REAR QUARTER

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QUARTER TRIM

REAR QUARTER ARMREST - "B, C and E" Two-Door Styles (Including "E-67" Style)

The "B, C and E" two-door hardtop and the "E-67" convertible styles are equipped with "floor mounted type" armrests. The armrests extend from arm position to floor, and from body lock pillar to rear seat back panel (Figs. 6-1, 6-2 and 6-3).

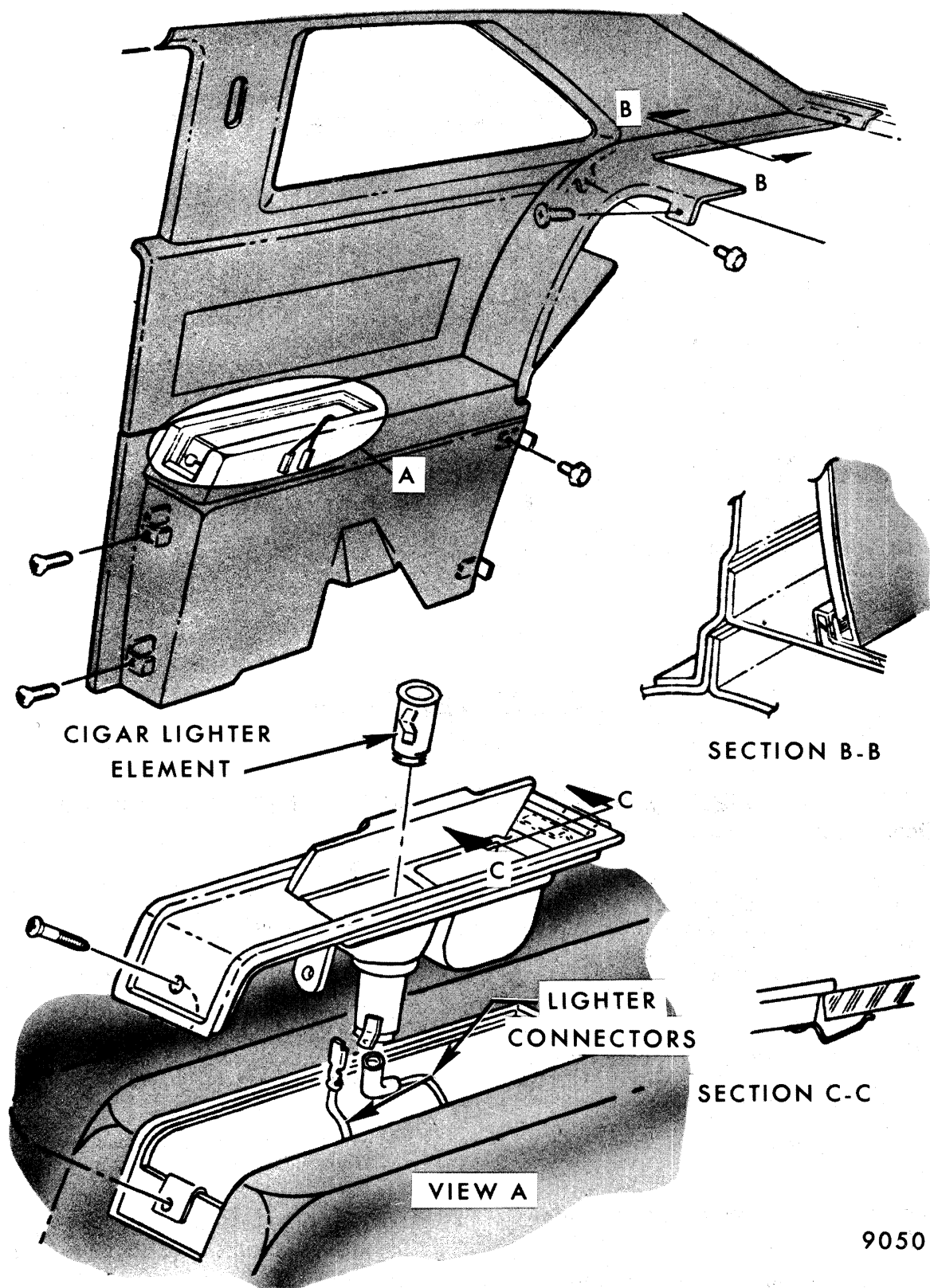
Removal and Installation

1. Remove rear seat cushion and back assemblies.
2. Remove armrest front and lower attaching screws.
3. Remove attaching screw at upper rear of armrest (Figs. 6-1, 6-2 and 6-3).
4. Where present, detach electrical wiring and remove trim assembly (View "A", Fig. 6-1; View "B", Fig. 6-3).
5. To install, connect electrical wiring and reverse removal operations.

REAR QUARTER TRIM ASSEMBLY - All Two-Door Styles, Except "A, F, H and X" Styles

Removal and Installation

1. Remove rear seat cushion and back assemblies.
2. Where present, remove quarter window regulator handle (see Fig. 6-5).
3. Remove quarter trim and where present quarter filler panel.
4. Where present, remove attaching screw(s) from front and/or rear of quarter trim assembly (Figs. 6-1, 6-2 and 6-3).
5. On Cadillac "E" styles remove attaching screws at top outboard side of lock pillar and at rear and bottom edges (Fig. 6-4 and 6-3).
6. Detach quarter trim by lifting assembly off hanger retention.
7. Where present, detach electrical wiring and remove trim assembly.



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Fig. 6-1-Quarter Lower Trim Assembly Attachment - Two-Door Hardtop Styles ("C" Style Shown)

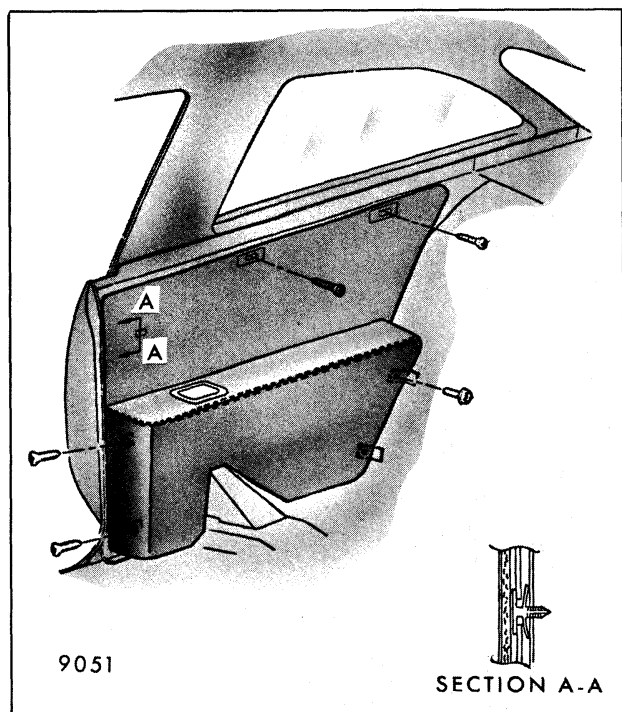


Fig. 6-2-Quarter Lower Trim Assembly Attachment - Chevrolet "B" Two-Door Hardtop

8. To install, connect electrical wiring and reverse removal operations.

REAR QUARTER TRIM PANEL - "A, F, H and X" Styles

The rear quarter trim panel consists of a one-piece plastic panel. On "A, F and H" styles, the armrest is an integral component of the trim panel; on "X" styles, the armrest is applied to the trim panel prior to trim installation. The "X" style armrest has a removable cover.

Removal and Installation

1. Remove rear seat back and applicable rear seat cushion.
2. Remove adjacent trim where applicable.
3. To remove quarter upper trim, proceed as follows:
 - a. On "F" styles, disengage plastic clips (Section "B", Fig. 6-6) and remove attaching screws from rear of trim panel (Section "C", Fig. 6-6).
 - b. On "A" styles, remove three attaching screws securing panel assembly to brackets (Fig. 6-7).

- c. On "X" styles with deluxe trim, remove attaching screw under ash tray securing pad to armrest to gain access to two attaching screws. To remove trim on "X" styles with standard trim, remove single attaching screw at lower rear portion of trim (Fig. 6-8).
- d. On "H-27" styles, remove single attaching screw at rear of trim panel, (Fig. 6-7).
4. Remove door opening sill plate. Then slide trim panel forward and remove quarter trim panel.
5. To install, reverse removal operations.

REAR QUARTER FRONT AND/OR REAR TRIM ASSEMBLY - "H-07,11,15,77" Styles

Removal

1. On "11" styles with standard rear seat, remove rear seat cushion and back assemblies.

On "07,15 and 77" styles with folding rear seat back, remove rear seat cushion.

2. If removing front trim assembly, remove lower attaching screw (see Fig. 6-9). If removing rear trim assembly on "77" style, remove rear attaching screw (see Fig. 6-9).
3. At top of trim assembly, carefully insert trim removal tool BT- 7323 or equivalent between flanges of trim assembly retainer (see Section "A-A", Fig. 6-9) and carefully pry retainer out of hole in rear quarter inner panel - perform this operation at all retainer locations (see Fig. 6-9). Retainers on "07" style are located at rearmost portion of quarter trim.
4. If removing front trim panel, remove door sill plate, then pull panel forward to disengage front of panel from body lock pillar pinchweld flange and remove trim assembly.

If removing rear trim panel, pull panel rearward to disengage front of panel from under rear of front trim panel; then lift panel upward to disengage lower retainers from floor filler panel (see Section "C-C", Fig. 6-9) and remove trim assembly.

Installation

1. Before installing rear quarter trim assembly, check that all trim retainers are securely installed to trim assembly and are not damaged; where required, replace damaged trim retainer(s) as follows:

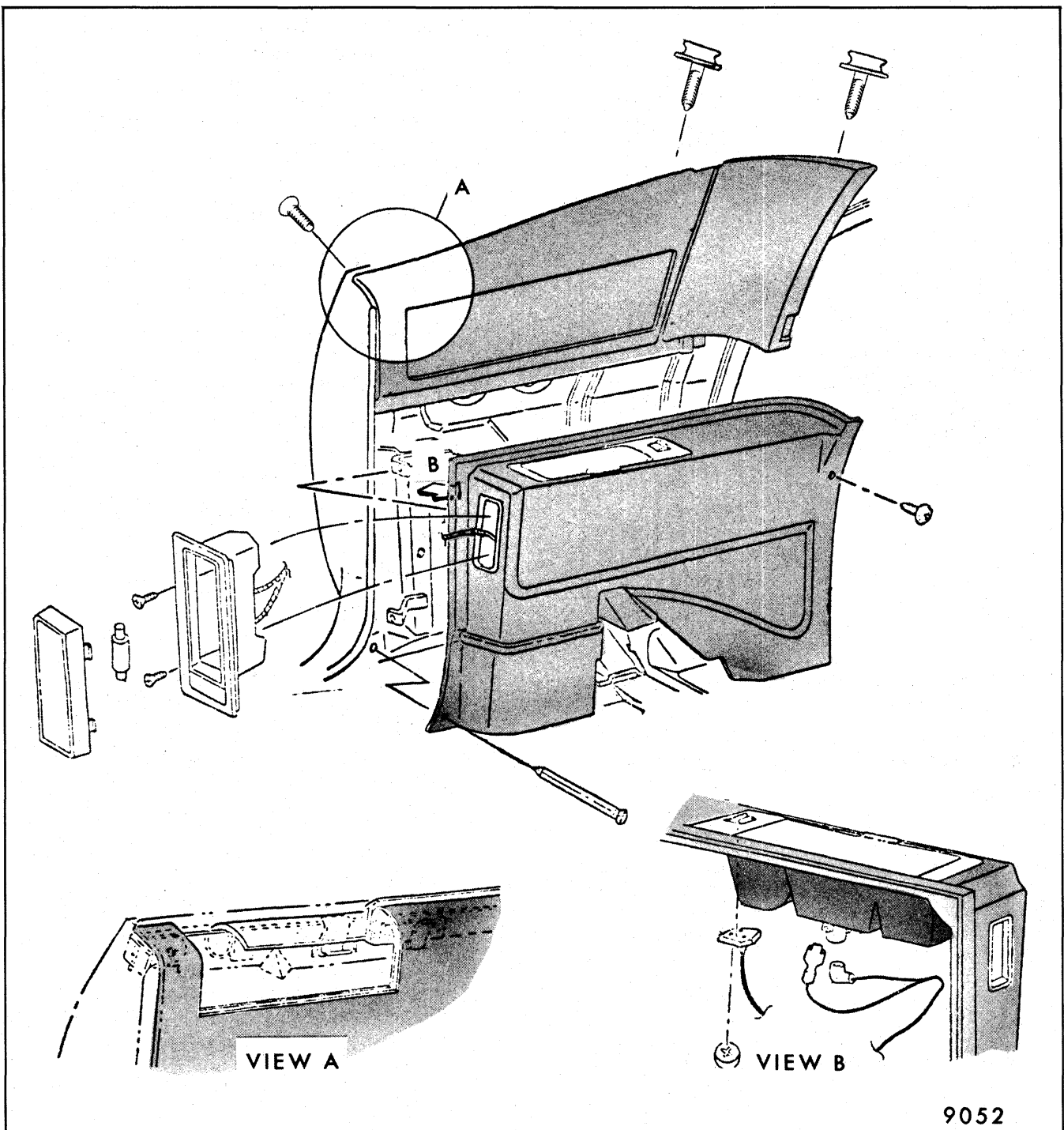


Fig. 6-3-Quarter Trim Assembly Attachment - Cadillac "E-67"

2. To install quarter trim assembly, position trim assembly as follows:
 - a. Trim assembly retainer replacement - start retainer flange with 1/4 cut-out (see Section "A-A", Fig. 6-9) into attachment hole in trim assembly; then rotate retainer until flange with 1/4 cut-out is inside of attachment hole.
 - a. Front trim assembly - engage front of trim around body lock pillar pinchweld flange; then align retainers with attaching holes in quarter inner panel.
 - b. Rear trim assembly - engage tabs along bottom of trim assembly over flange of floor filler panel; then align retainers with attaching holes in quarter inner panel.

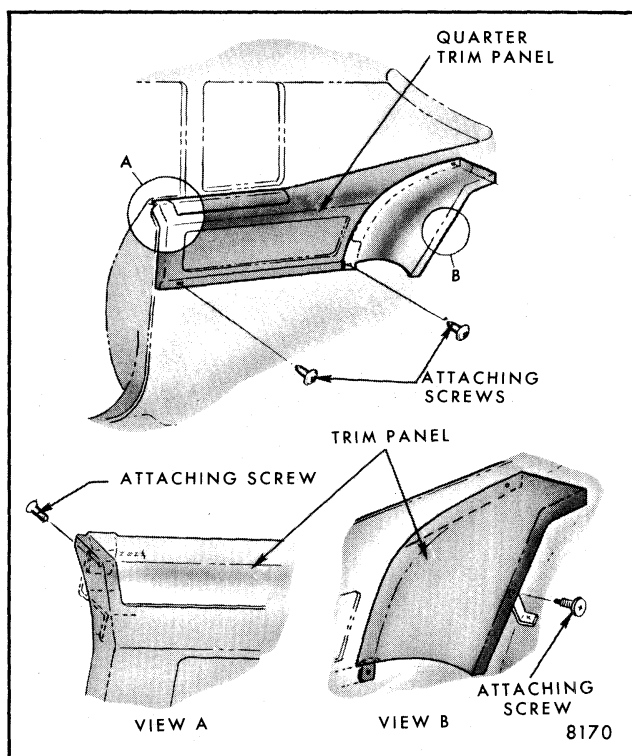


Fig. 6-4-Quarter Trim Assembly Attachment - Cadillac "E-47" Styles

3. Carefully tap retainers into attaching holes in quarter inner panel with a clean rubber mallet.

REAR QUARTER TRIM FINISHING PANEL - All Four-Door and "A-80" Styles

Removal and Installation

1. Remove rear seat cushion and back assemblies (four-door styles only).
2. On "A, B and X" styles, remove attaching screws from trim panel (Fig. 6-10) and remove trim panel.

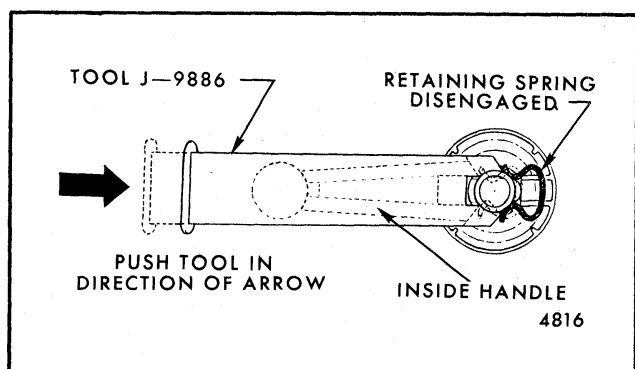


Fig. 6-5-Regulator Handle Removal

3. On "C" styles, insert tool BT-7323 or equivalent at each clip location and pry retaining clip from plastic retaining plugs (View "B", Fig. 6-11) and remove trim panel.
4. To install, reverse removal operations.

REAR QUARTER UPPER TRIM (Above Belt) - All Styles

Removal and Installation

1. On styles so equipped, detach molding or finishing lace from side of back window opening and along side roof rail adjacent to quarter upper trim assembly.

NOTE: Refer to "Section 8 - Roof" of this manual for interior garnish molding removal procedures.

2. Remove attaching screw or, if cemented (Views A and C, Fig. 6-19), carefully break cement bond between upper trim and retainer along back window.
3. On "A-29 and 37" styles insert tool J-24416 or equivalent, between upper edge of trim and inner panel. Pry clip and molding inboard to remove (Fig. 6-13).
4. To remove clips at base of quarter window, lift quarter trim panel up at body lock pillar until first retaining clip is visible. Using a flat-bladed screwdriver, pry panel upward to separate from plastic retaining clip metal bracket (Fig. 6-13). To remove clip from quarter inner panel piercing, depress tab and pull upward with pliers.
5. On styles equipped with courtesy lamps in quarter upper trim (Figs. 6-14, 6-16 and 6-19), remove as follows:
 - a. Insert a flat-bladed screwdriver or similar tool between courtesy lamp lens and lamp base. Press outboard to disengage lens retaining tabs from base.
 - b. Remove bulb from terminal clips.
 - c. Remove two lamp base attaching screws.
 - d. To disengage wire harness from lamp base, grasp terminal clip with pliers and push clips through back of base.
6. To install trim assembly, feed courtesy lamp

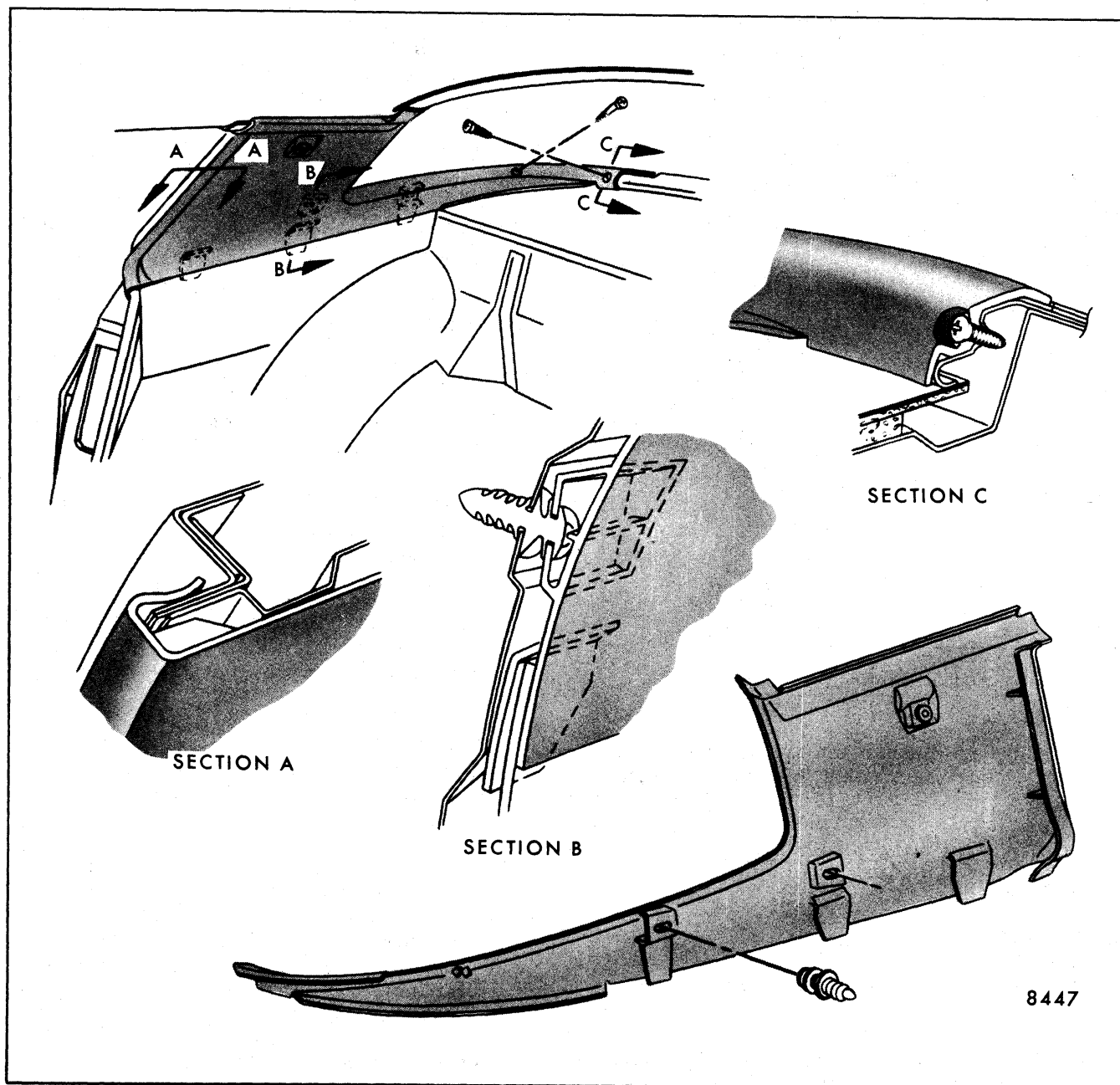


Fig. 6-6-Rear Quarter Trim Attachment - "F" Styles

wire through trim panel. Also, position trim assembly at lower retaining clip (View B, Fig. 6-19; Section B-B, Fig. 6-12; Section C-C, Fig. 6-13) and along front and rear edges. Then secure fasteners with moderate hand pressure. Reverse balance of removal operations.

7. On styles with one-piece plastic quarter upper trim, the panel is attached to the inner panel with screws and/or plastic fasteners.

The fasteners are attached to the quarter upper trim panel by inserting fastener into an extrusion

of the trim panel and turning to secure.

8. To remove, loosen adjacent moldings where required and remove visible attaching screws (Figs. 6-12, 6-13, 6-14, 6-16, 6-17 and 6-20).

NOTE: On Oldsmobile "E-57" and Cadillac "C-47" styles (View "A", Figs. 6-16 and 6-20), remove assist strap escutcheon to remove assist strap attaching screws.

9. Insert tool BT-7323 or equivalent under lower front and/or rear edges of trim panel until tool

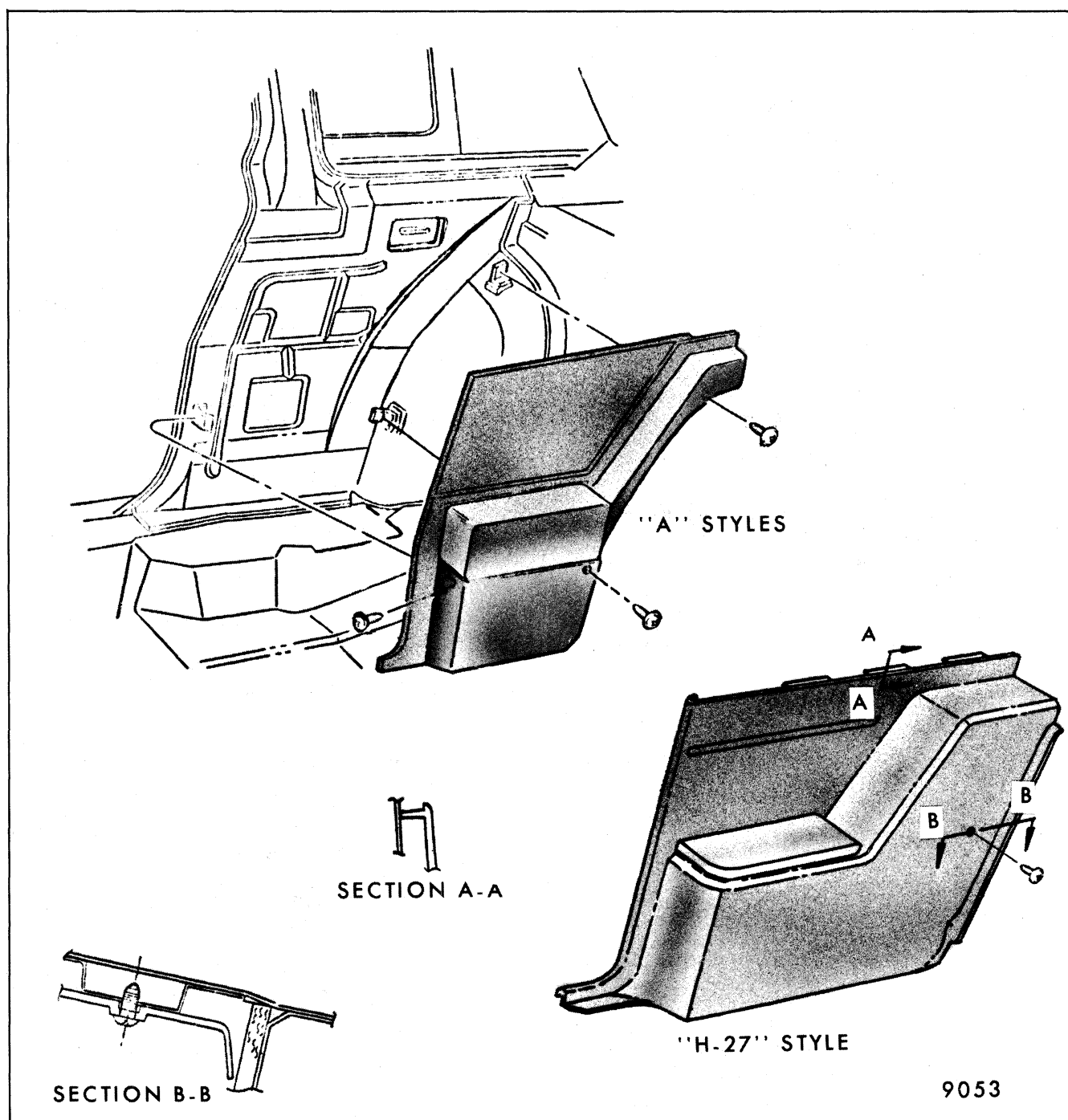


Fig. 6-7-Quarter Trim Assembly Attachment - "A and H-27" Styles

engages around fastener. Then pry inboard to remove fastener and trim panel (Figs. 6-15, 6-14, 6-16 and 6-17).

10. To remove quarter upper trim panels on "X-69" style, grasp rear of trim panel directly below plastic fasteners (Fig. 6-18), and pull inboard

until clip disengages from quarter inner panel.

11. To install, align fasteners to piercings in quarter inner panel and press firmly in place. Reinstall previously removed attaching screws and assist strap escutcheons (if so equipped).

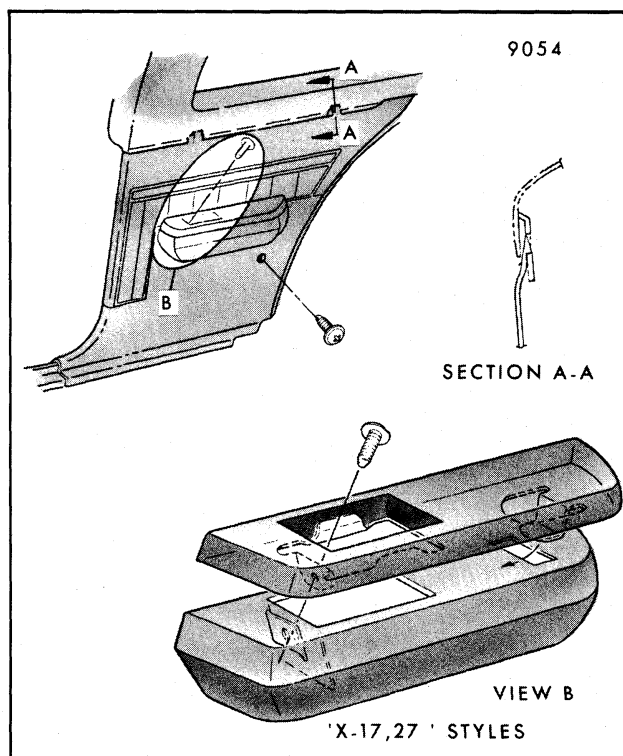


Fig. 6-8-Quarter Trim and Armrest Attachment - "X-17,27" Styles

BODY LOCK PILLAR FINISH MOLDING OR WINDLACE ASSEMBLY - "A, B and C" Coupe Styles

Removal and Installation

1. On "B and C" styles, remove rear quarter trim assembly and detach door sill plate.
2. Pull inboard on the windlace to disengage from the lock pillar (Fig. 6-21).
3. On certain "A" styles, a body lock pillar finish molding is installed over the front edges of the upper and lower quarter trim panels. To disassemble, remove four attaching screws and pull molding forward.
4. To install, reverse removal operations.

REAR QUARTER TRIM FRONT FINISHING PANEL - "B" Station Wagon Styles

Removal and Installation (Refer to Figure 6-22)

1. Detach quarter window lower garnish molding.
2. Detach side roof rail finishing molding and

remove rear body lock pillar upper finishing panel.

3. Detach door sill plate.
4. On all "B" styles with split second seat, remove seat back lock striker and bumper assembly from wheelhouse.
5. Remove attaching screws from finishing panel and remove panel (Fig. 6-22).
6. To install, position finishing panel to rear lock pillar and reverse removal operations.

REAR QUARTER WHEELHOUSE TRIM COVER PANEL - "X-17" Styles

Removal and Installation

1. Loosen side roof rail garnish molding.
2. Remove back body opening garnish molding.
3. Remove rear seat cushion and seat back lock striker.
4. Detach rear end finishing panel.
5. Disengage top of trim panel from weld-on clips at underside of gutter, then lift upward to release panel from clips at bottom.
6. Disconnect electrical wiring from trim panel components if present.
7. Carefully spread panel apart and slide over rear compartment counterbalance support.

NOTE: If replacing trim panel and new panel is not separated at counterbalance support hole, cut new panel as required.

8. To install, reverse removal operations.

REAR QUARTER WHEELHOUSE TRIM COVER PANEL - (Right Side) - "A and B" Station Wagon Styles

Removal and Installation (Refer to Figures 6-23 and 6-25)

1. Remove quarter window lower and front garnish moldings.
2. On "B" styles, remove rear quarter trim front finishing panel.

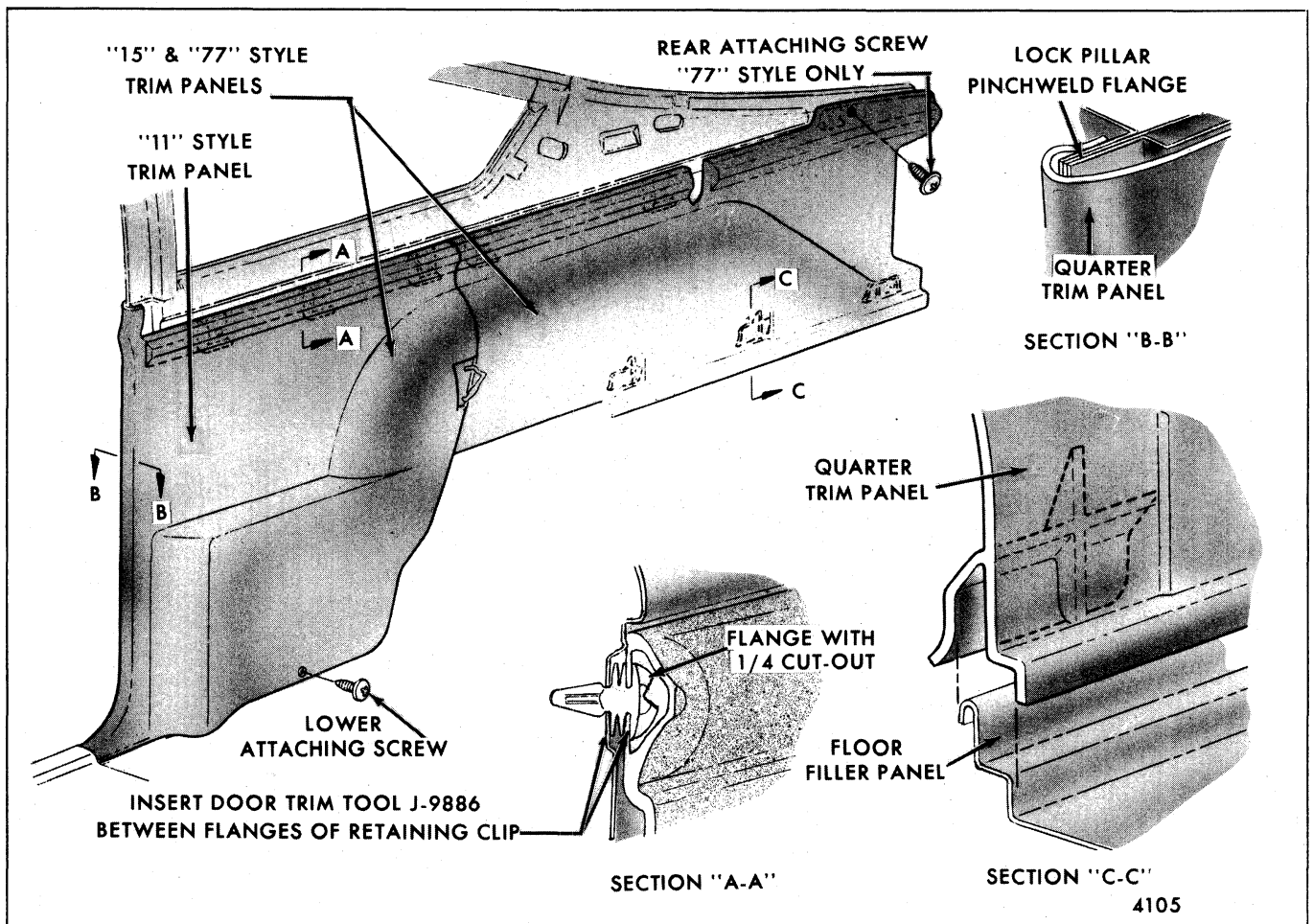


Fig. 6-9-"H-11,15 and 77" Rear Quarter Trim Assembly ("H-07" Similar)

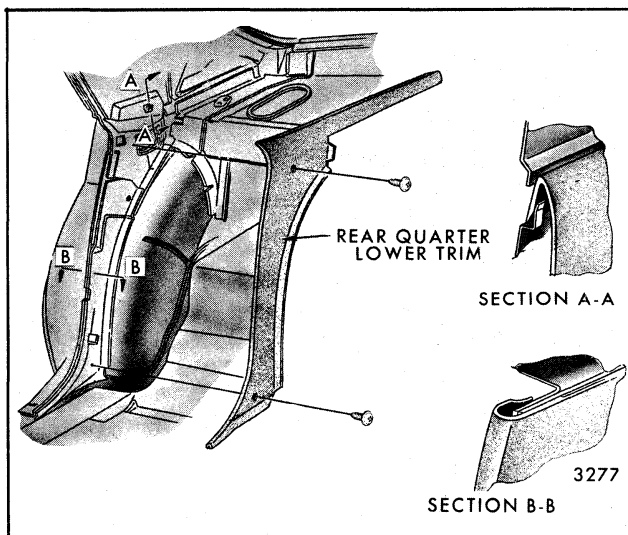


Fig. 6-10-Quarter Trim Assembly Attachment - "A, B and X" Four-Door and "A-80" Styles

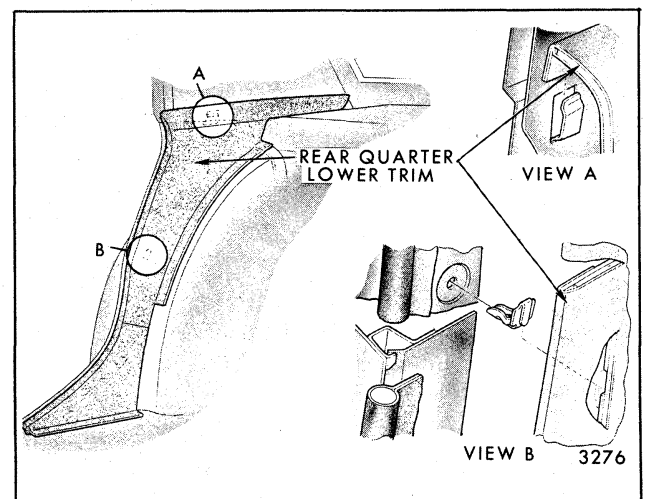


Fig. 6-11-Quarter Trim Assembly Attachment - "C" Four-Door Styles

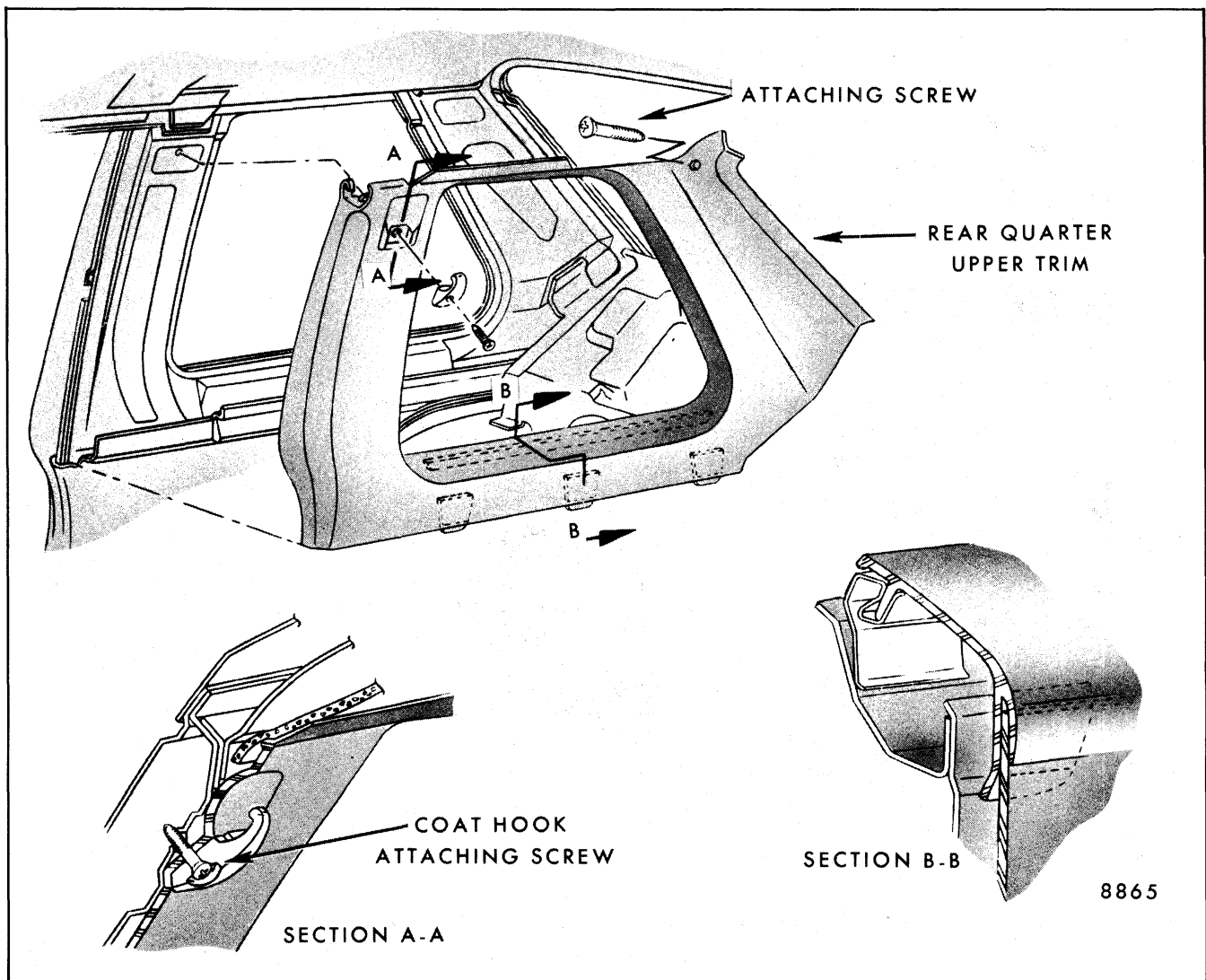


Fig. 6-12-Quarter Upper Trim Attachment - "H-27 and A-57" Styles

3. Remove spare tire cover panel.
4. Remove second folding seat back lock striker and bumper assembly from wheelhouse.
5. Remove attaching screws from perimeter of trim cover panel and remove panel.
6. On "A" styles, disengage edge of trim cover panel from supports and move forward to release from lock pillar flange (Fig. 6-25).
7. On styles with folding third seat back lock remote control assembly installed, detach remote control handle from cable (Fig. 6-24).
8. To install, reverse removal operations.

SPARE TIRE COVER PANEL - "A and B" Station Wagon Styles

Removal and Installation

On "B" styles, the spare tire cover panel is retained at the beltline by an overlapping quarter window garnish molding. The cover panel is secured at the bottom by a striker and folding (catch-type) lock handle (Fig. 6-23). To remove cover, open lock handle, swing bottom of cover outward to release at beltline and remove. To install, reverse removal procedure.

On "A" styles the spare tire cover is retained by two tabs that engage the front flange of the wheelhouse panel when placed in position. The cover panel is also secured at the top by snap supports and along the back when inserted between the back body pillar

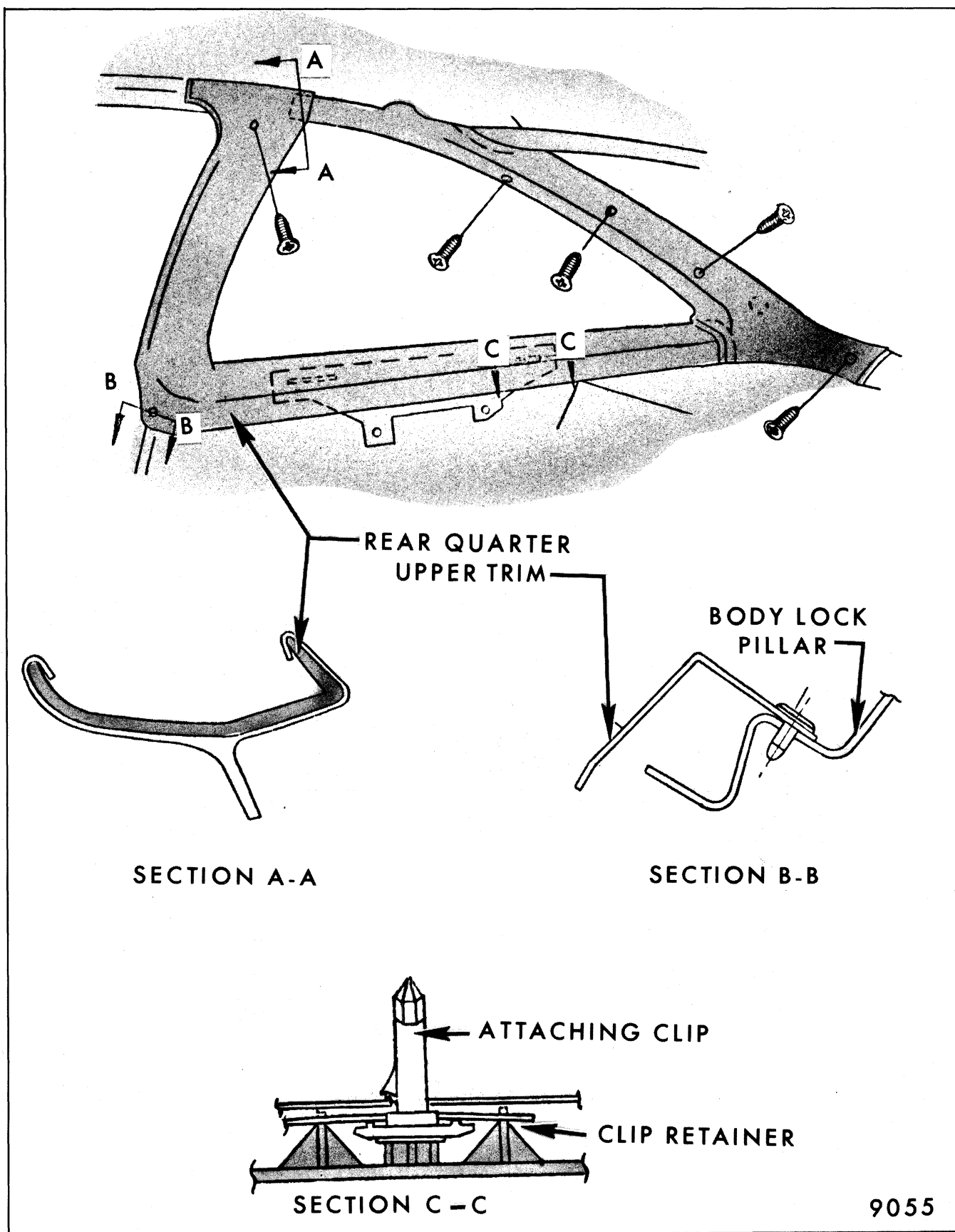


Fig. 6-13-Quarter Upper Trim Attachment "A-37" Styles

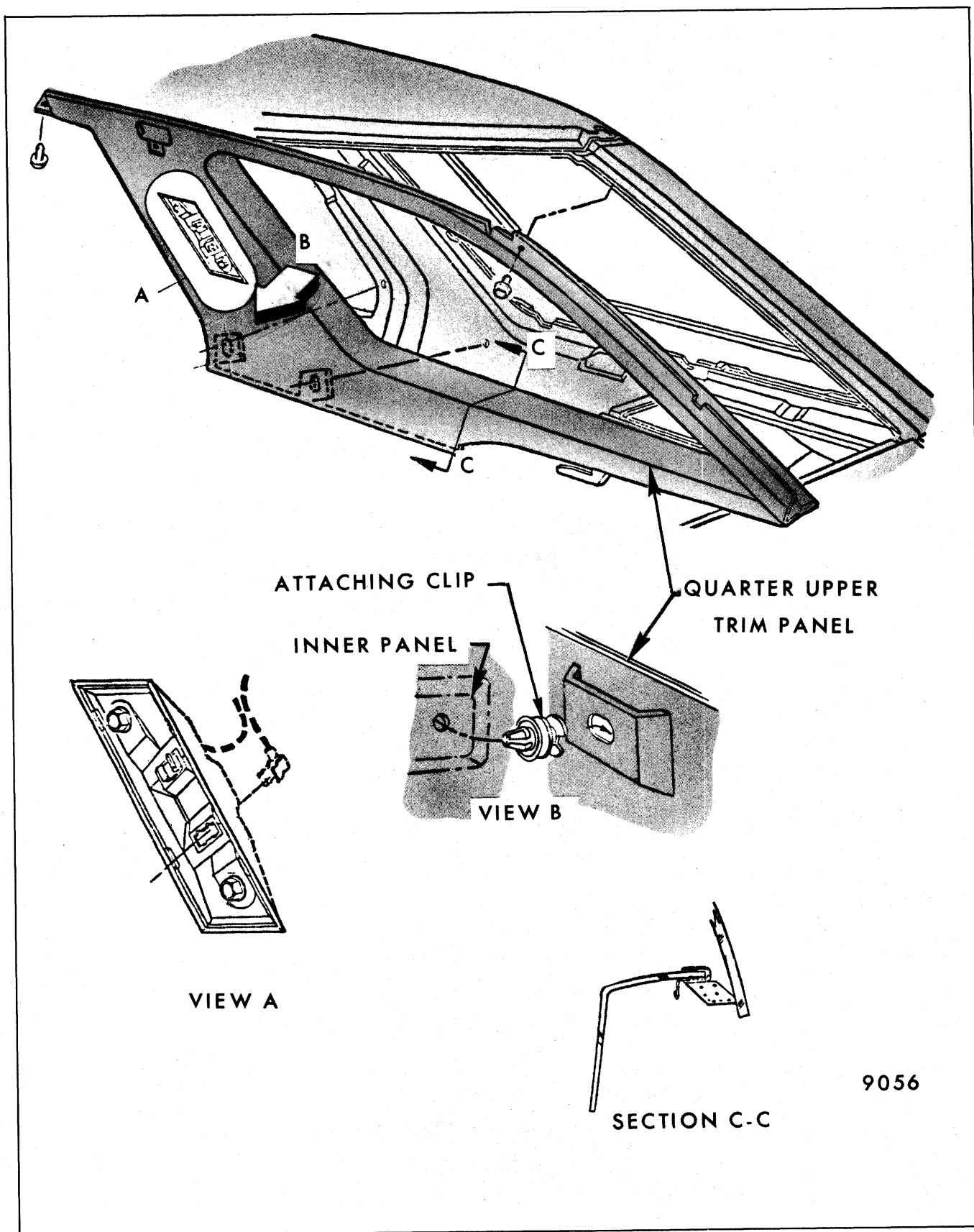


Fig. 6-14-Quarter Upper Trim Attachment - "B" Style Shown, "E- 87" Similar

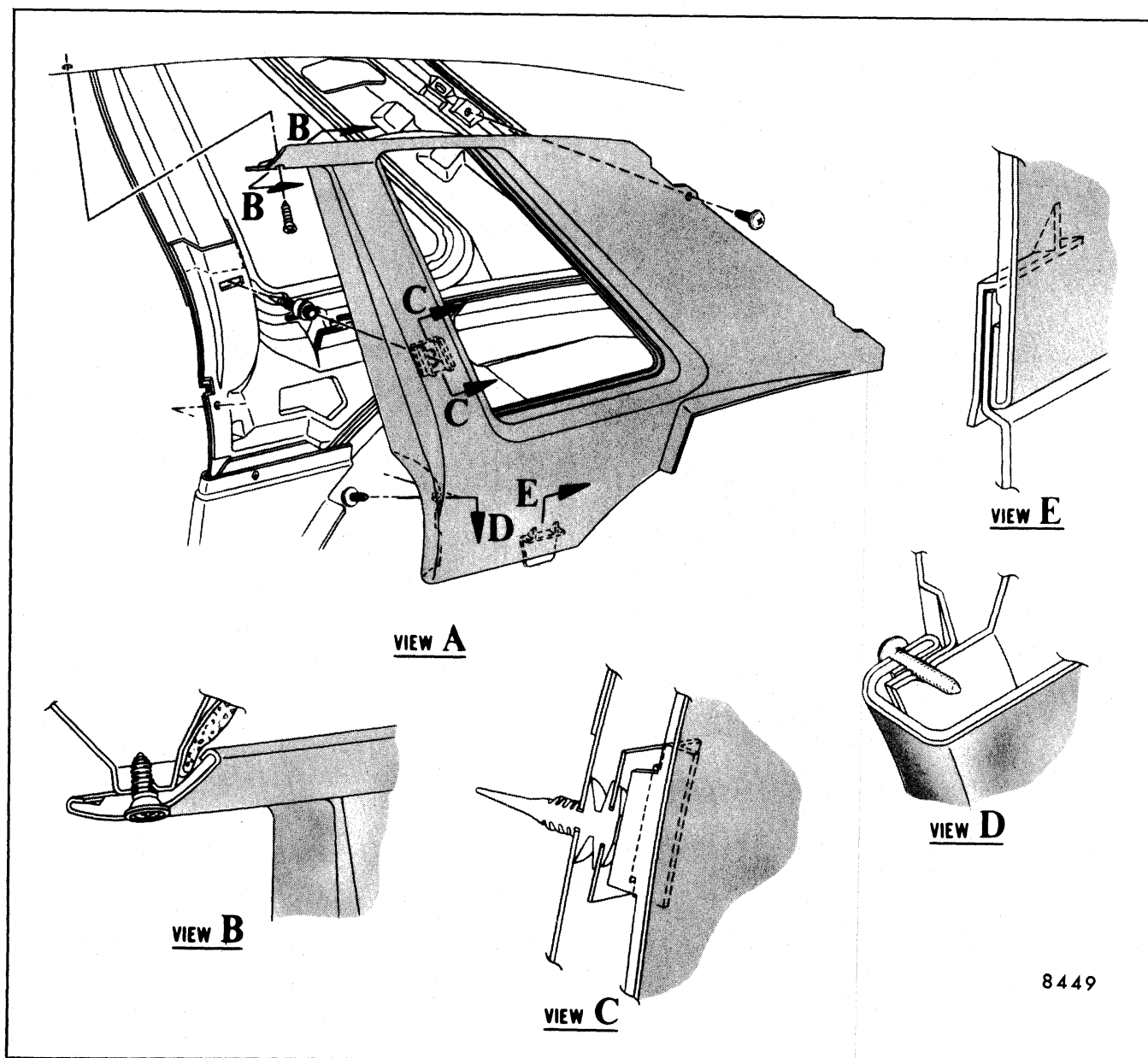


Fig. 6-15-Quarter Upper Trim Attachment (4-Door Style)

molding and clip (Fig. 6-25). To remove cover, open catch and disengage panel by pulling inboard at rear and top. Then move panel rearward to separate from wheelhouse cover tabs (Fig. 6-25).

NOTE: On styles with tailgate window defogger, disconnect hose from defogger outlet grille to complete removal.

On "A" styles with quarter vent division channel garnish molding, remove molding by inserting a screwdriver or similar tool at lower end of molding and prying outboard (Fig. 6-26).

To install, align groove in molding to side of plastic

clips and force molding in place with heel of hand.

REAR QUARTER WHEELHOUSE TRIM COVER PANEL (LEFT SIDE) - "B" Station Wagon Styles

Removal and Installation

1. Remove quarter window lower and front garnish molding.
2. On styles with optional split seat, remove seat back bumper or seat back lock striker.

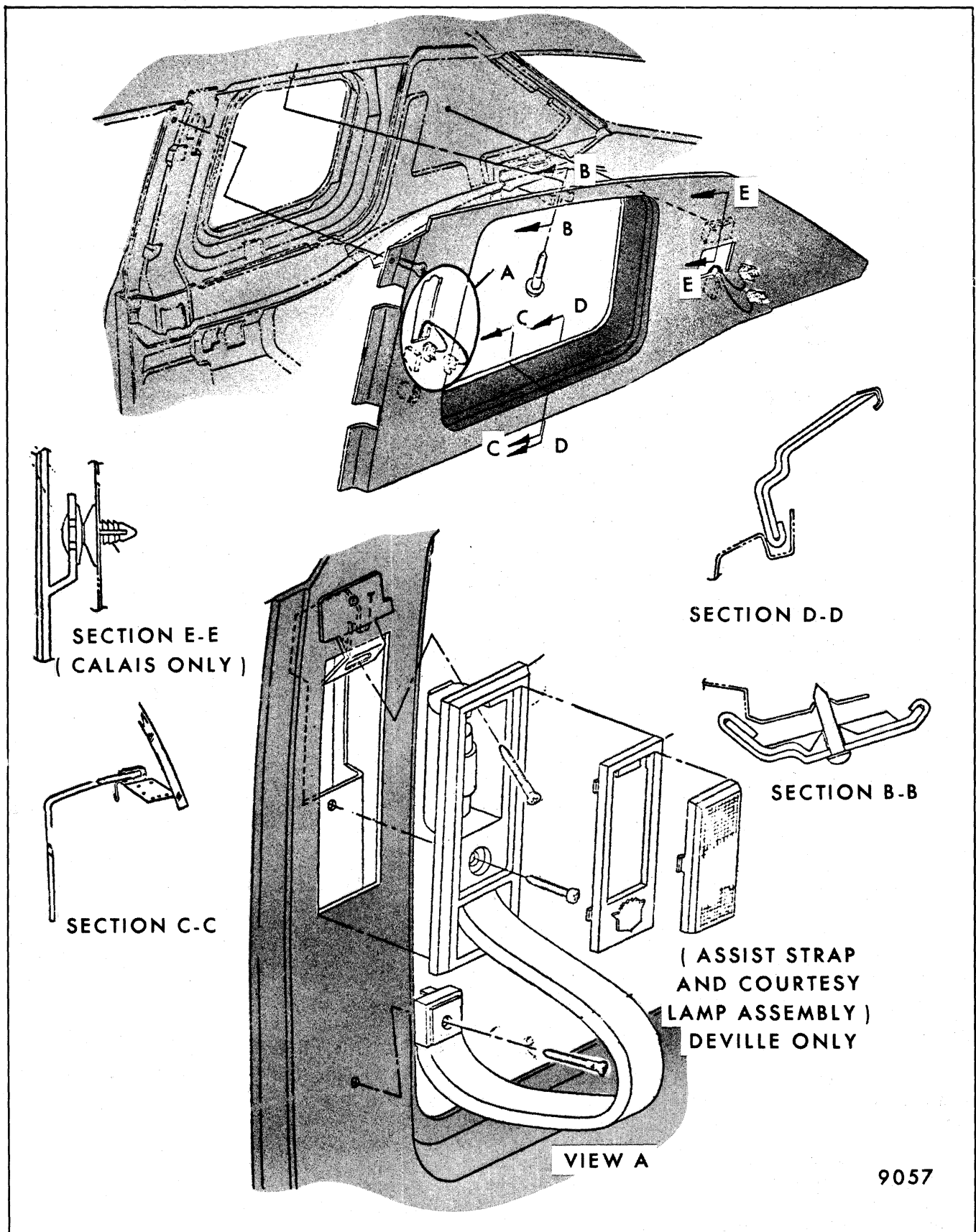
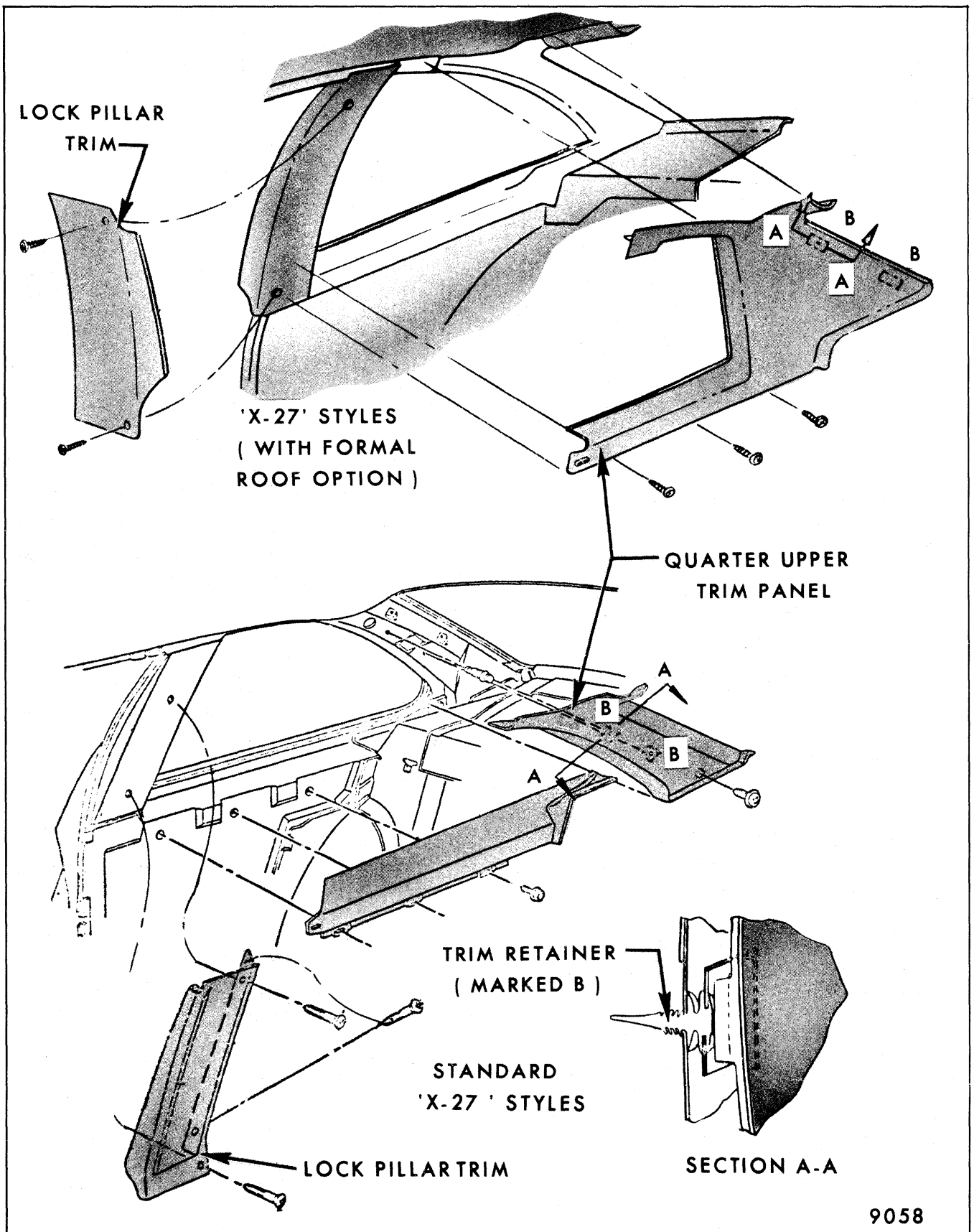


Fig. 6-16-Quarter Upper Trim Attachment - Cadillac "47" Styles



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Fig. 6-17-Quarter Upper Trim Attachment - "X-27" Styles

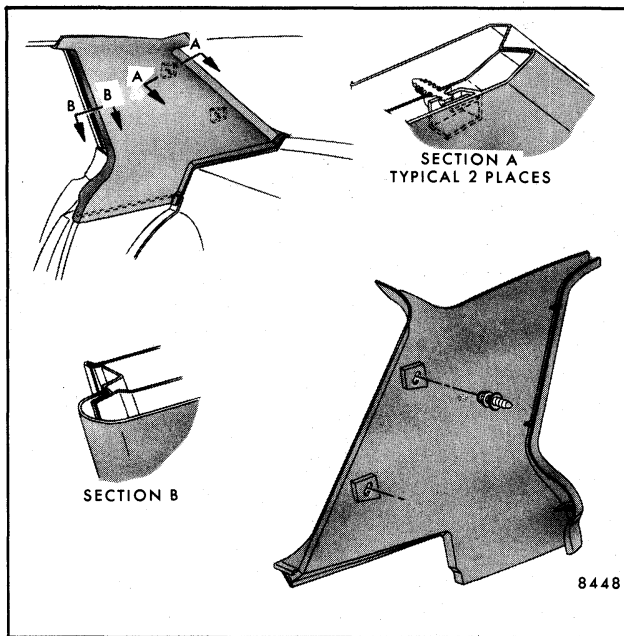


Fig. 6-18-Quarter Upper Trim Attachment - "X-69" Style

3. Remove rear quarter trim front finishing panel.
4. Remove attaching screws from perimeter of trim cover panel as shown in Figure 6-23.
5. Detach electrical wiring from cover panel components and remove cover panel.
6. To install, connect electrical wiring and reverse removal operations.

REAR QUARTER REAR WHEELHOUSE TRIM COVER (LEFT SIDE)-"A" Station Wagon Styles

Removal and Installation

1. Remove two attaching screws and remove back body pillar lower trim panel.
2. Remove four attaching screws to loosen and disengage back body pillar upper trim panel from contact with rear wheelhouse trim.
3. Remove attaching screw at top center of rear wheelhouse trim.
4. Pull rear wheelhouse trim inboard, then rearward to disengage trim from front wheelhouse trim, then remove panel.

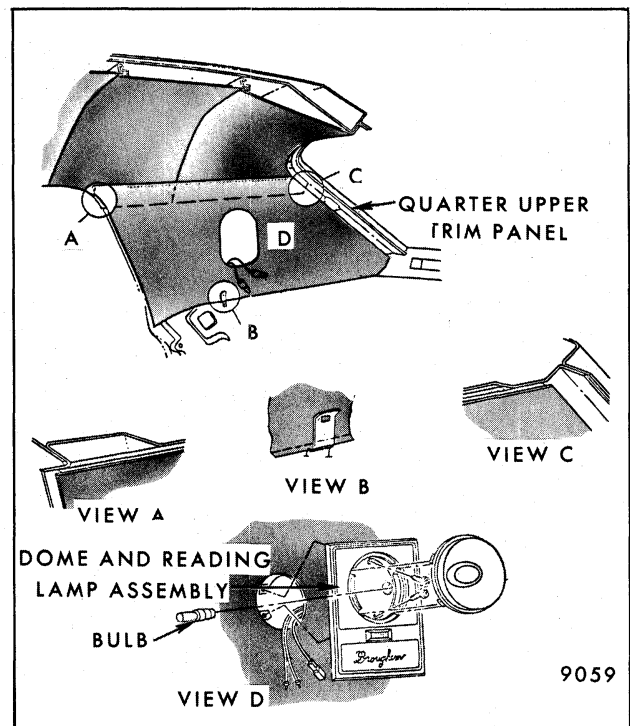


Fig. 6-19-Quarter Upper Trim Attachment - Cadillac "C-69" Style

5. To install, reverse removal procedure.

REAR QUARTER FRONT WHEELHOUSE TRIM COVER (LEFT SIDE)-"A" Station Wagon Styles

Removal and Installation

1. Remove rear wheelhouse trim cover as previously described, and remove front wheelhouse trim cover attaching screw hidden by rear cover.
2. With second seat folded down, remove folding seat back lock striker.
3. Remove two attaching screws and remove body lock pillar upper trim.
4. Remove front wheelhouse trim cover at center rear and lower front of panel.
5. Remove left rear door sill plate.
6. Slide trim panel forward and lift inboard to disengage at body lock pillar, then remove.
7. To install, reverse removal procedure.

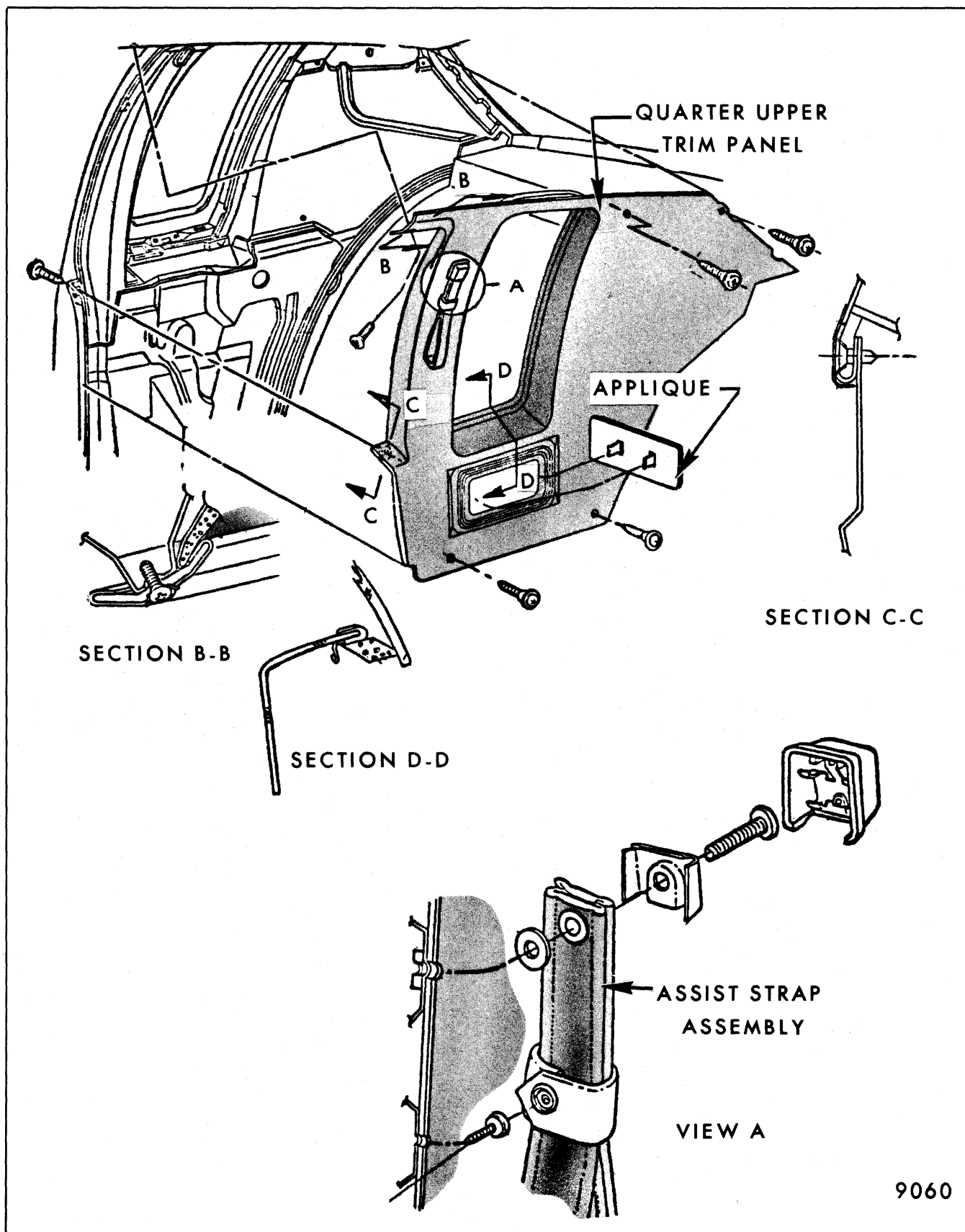


Fig. 6-20-Quarter Upper Trim Attachment - Oldsmobile "E-57" Styles

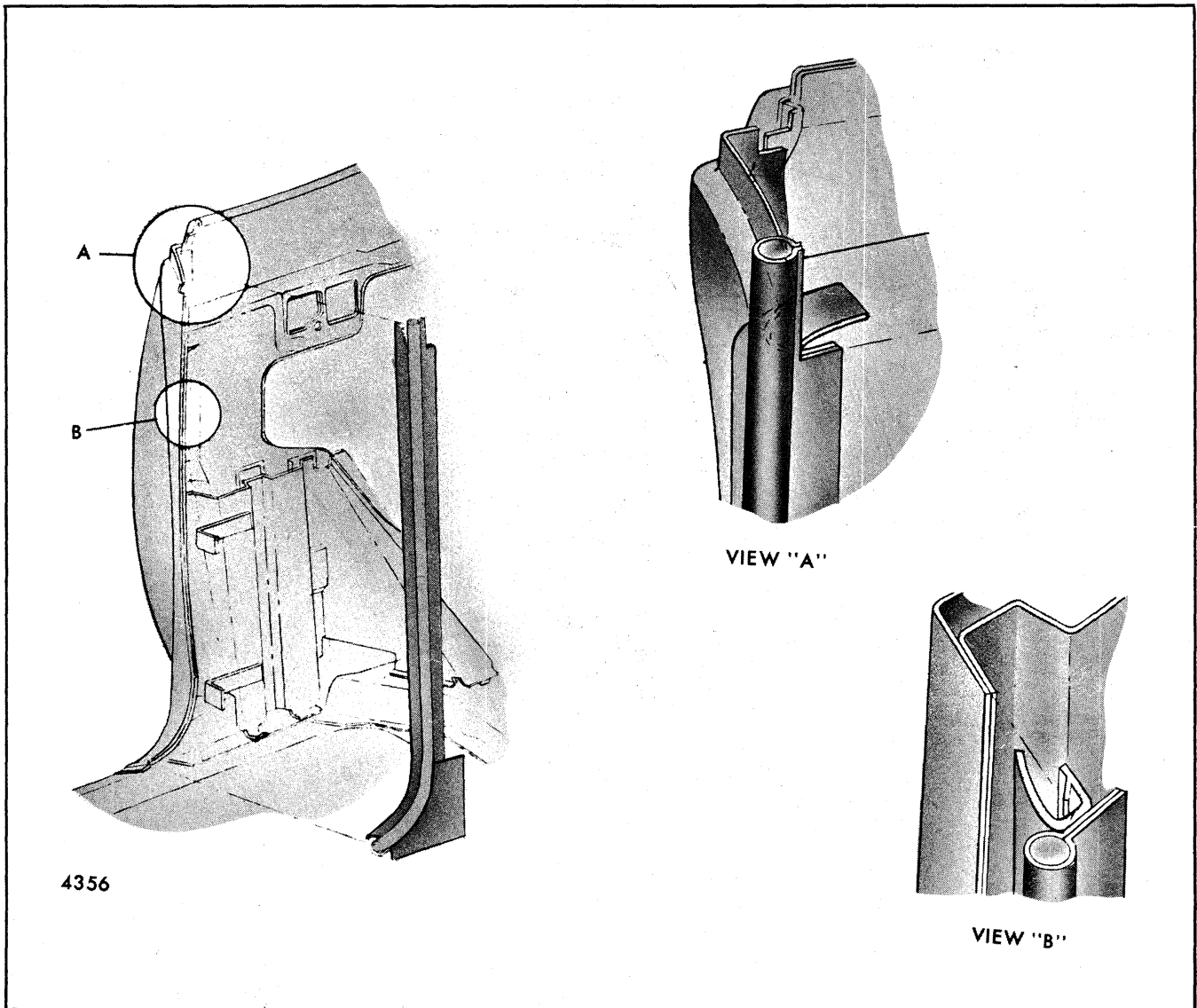


Fig. 6-21-Body Lock Pillar Windlace - "B and C" Styles

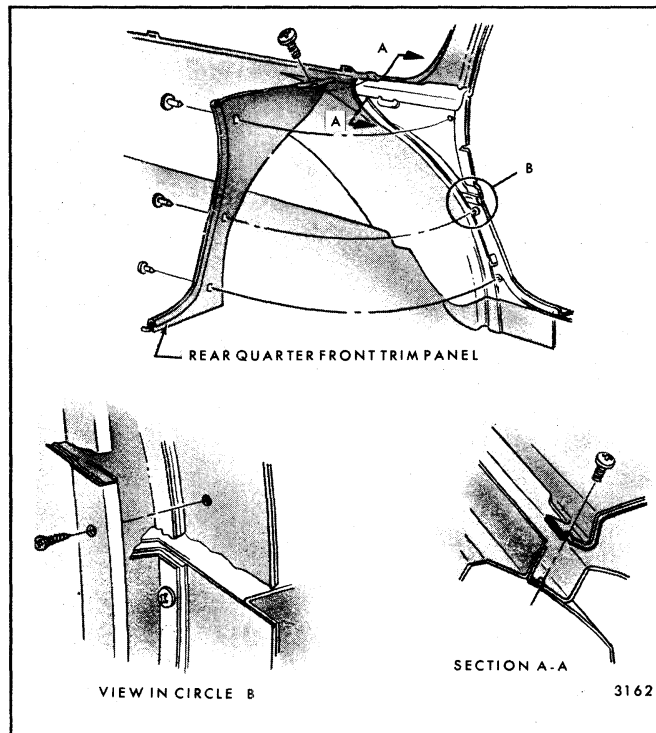
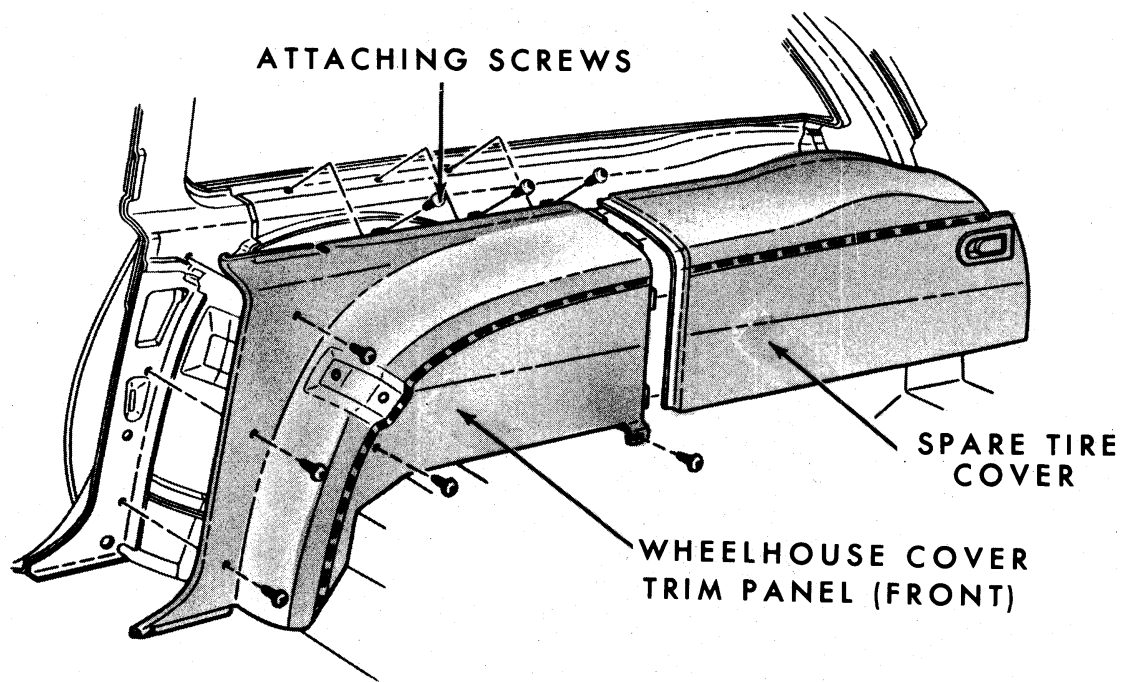
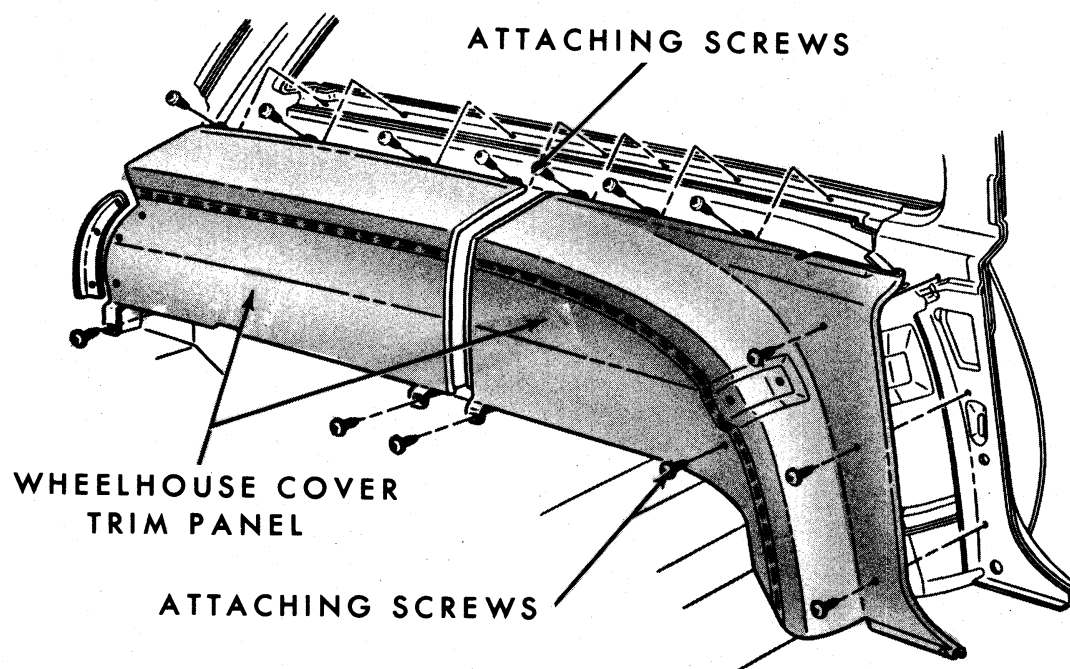


Fig. 6-22-Quarter Front Trim Finishing Panel - "B" Station
Wagon Styles



QUARTER TRIM "B" STATION WAGON RIGHT SIDE



QUARTER TRIM "B" STATION WAGON LEFT SIDE

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Fig. 6-23-Wheelhouse Trim Cover Panel (Right and Left Side) - "B" Station Wagon Styles

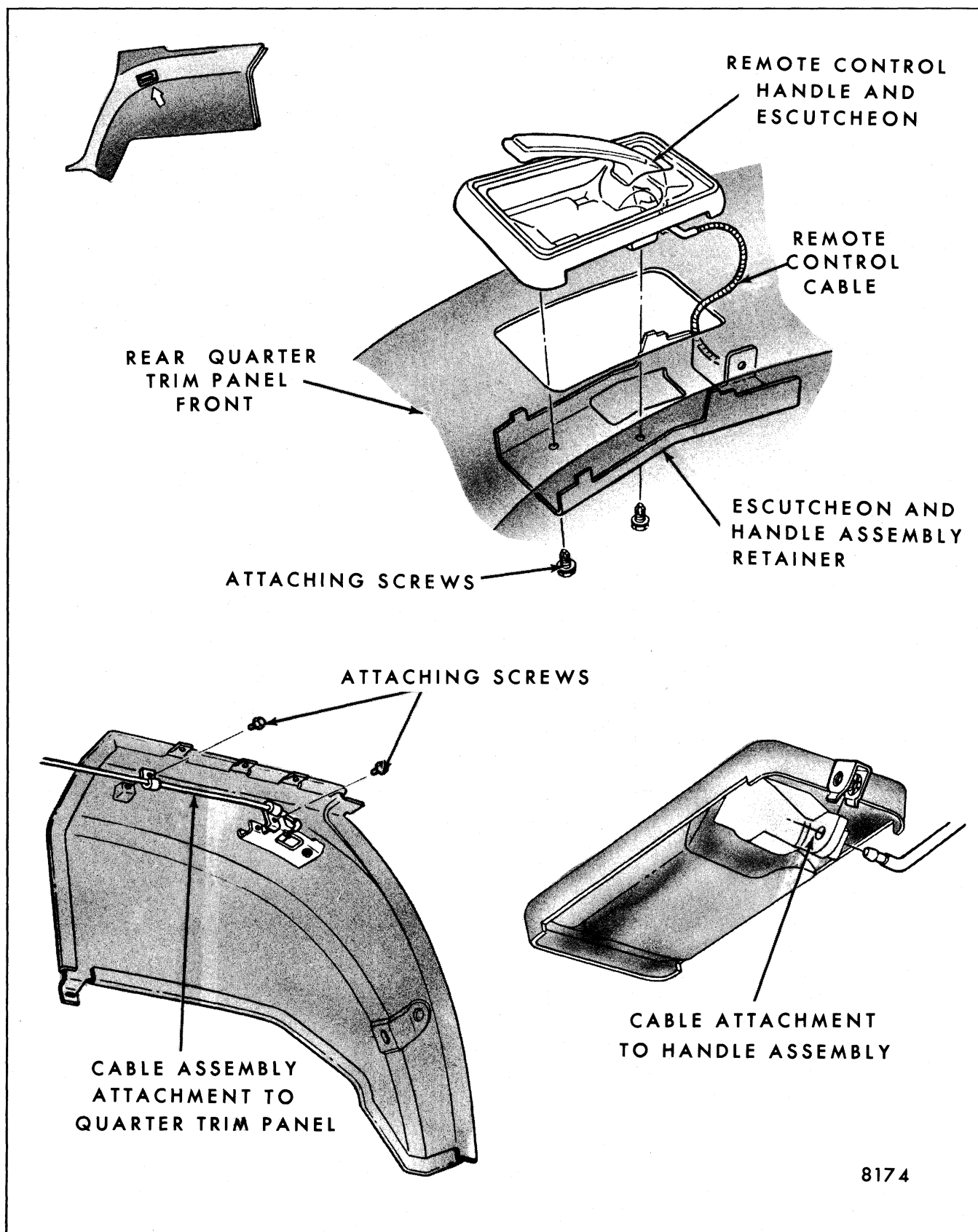


Fig. 6-24-Third Folding Seat Back Lock Handle and Cable Assembly

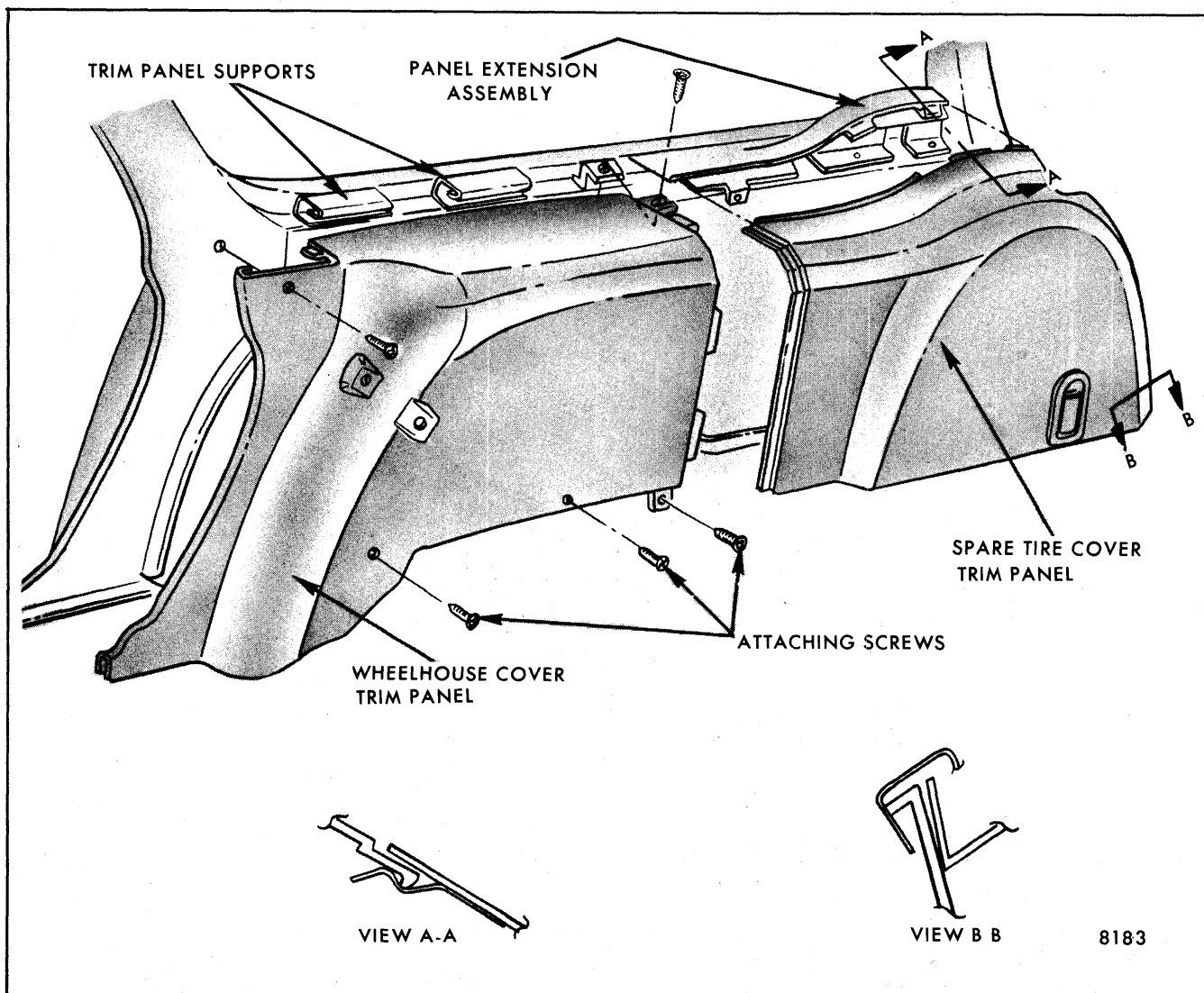


Fig. 6-25-Wheelhouse and Spare Tire Trim Cover Panel - "A" Station Wagon Styles

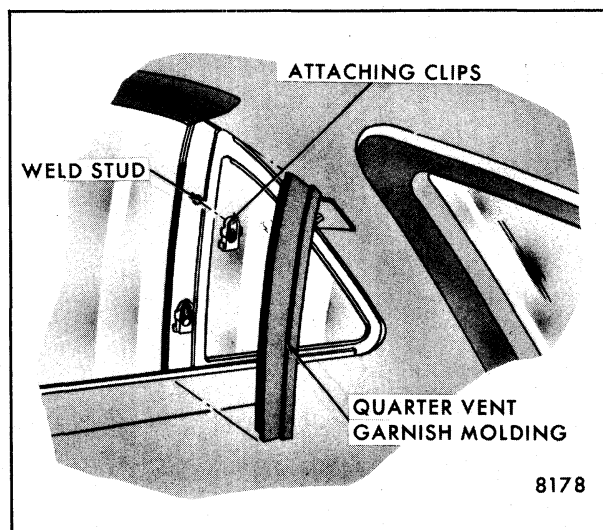


Fig. 6-26-Quarter Vent Division Channel Garnish Molding
"A-35" Styles

REAR SPEAKERS

REAR SPEAKERS - "35,45", "X-17", "H-07,15 and 77" Styles

Description

Rear speakers on "35,45", "X-17", "H-07,15 and 77" styles are installed to the inside surface of the rear quarter trim assembly (Figs. 6-27 and 6-28).

Removal and Installation

1. Remove rear quarter trim assembly as previously described.
2. Disconnect speaker wire from body harness.
3. Remove four speaker assembly to grille attaching nuts.
4. Remove grille from rear quarter trim assembly

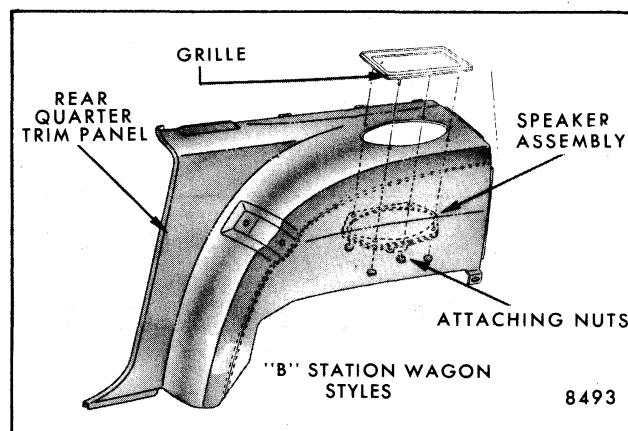


Fig. 6-27-Rear Speaker Installation - "35, 45" Styles

by lifting upward or outward.

5. To install, reverse removal procedure.

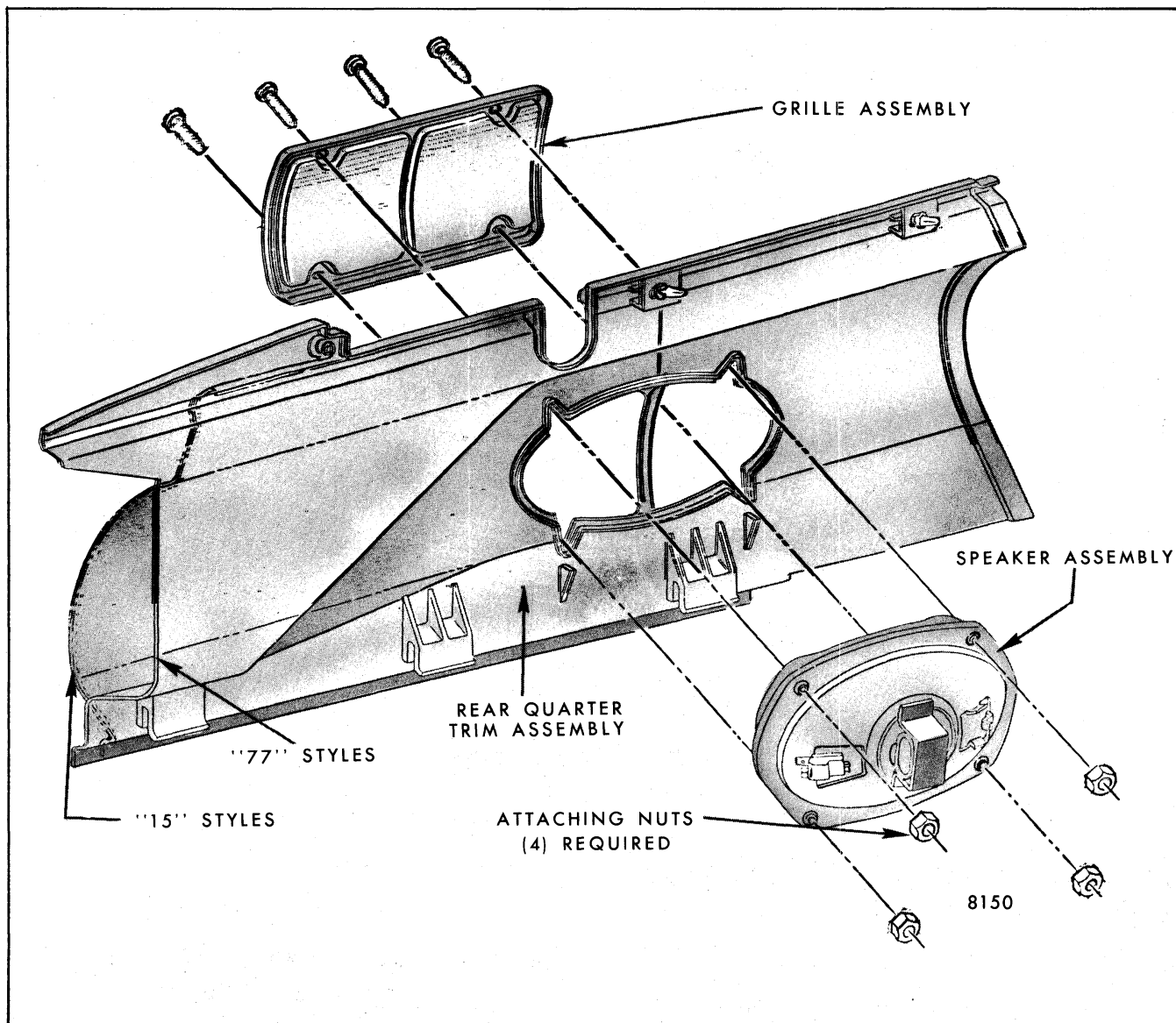


Fig. 6-28-Rear Speaker Installation - "H-15,77" Styles ("H-07" and "X-17" Similar)

BACK WINDOW DEFOGGER (BLOWER TYPE)

DESCRIPTION

The back window defogger on "B" station wagon, "H-07" and "X-17" styles is installed to the quarter trim assembly (left side only).

Air is drawn into the motor assembly adaptor or duct at the intake grille and forced out through the outlet grille against the back window at the top or side of the quarter trim assembly (see Fig. 6-29).

Removal and Installation

1. Remove quarter trim assembly as previously described.
2. Disconnect motor wire from body harness.
3. On "X-17" styles remove three attaching nuts from blower adaptor studs to separate blower assembly from adaptor. Then remove two attaching nuts from both intake and outlet grilles to complete disassembly (refer to Fig. 6-29).

On "B-35 and 45" styles, remove four attaching nuts to separate blower assembly from grille, cover panel and screen (see Fig. 6-29).
4. To install, reverse removal procedure.

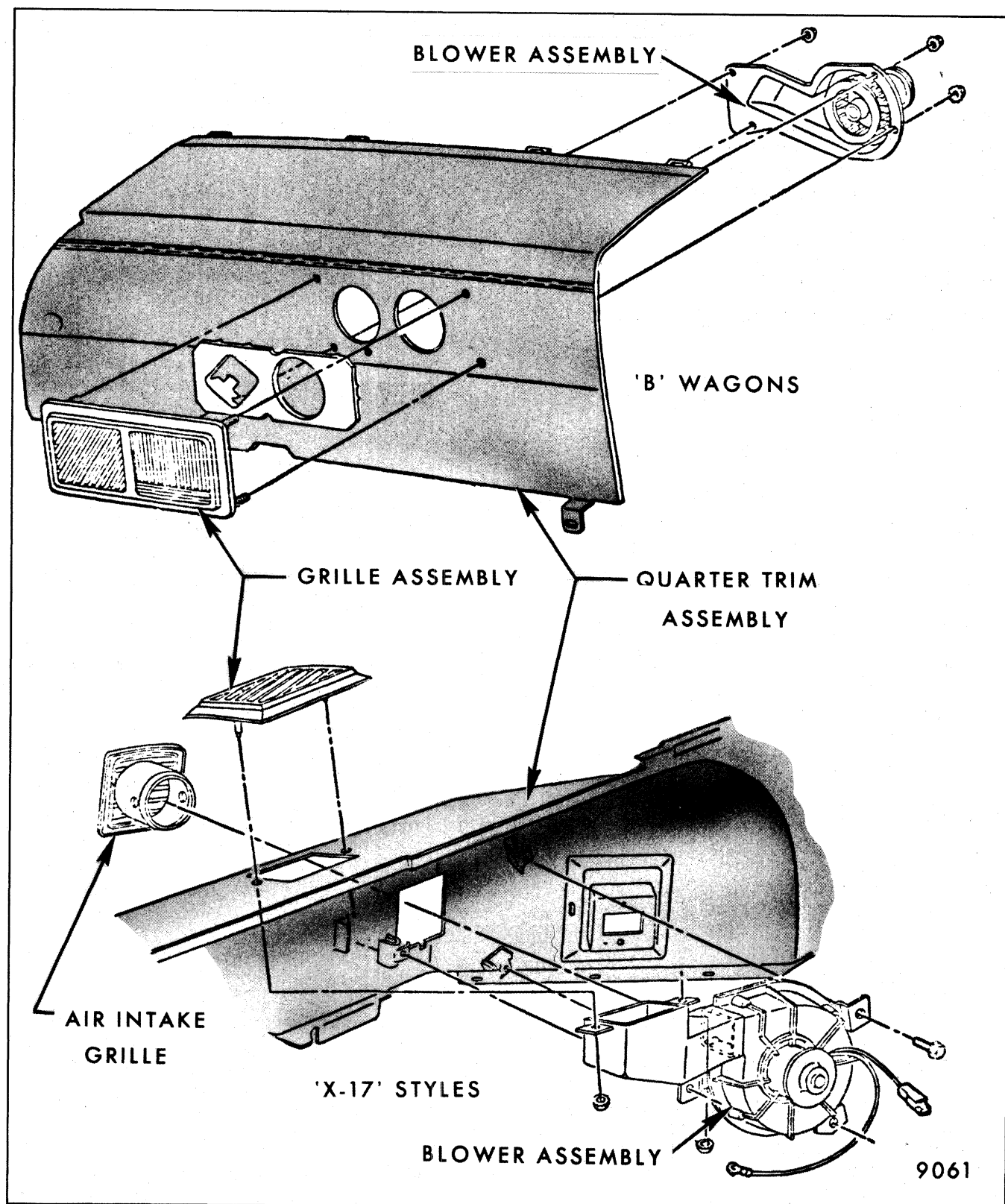


Fig. 6-29-Back Window Defogger - "B" Station Wagon and "X-17" Styles

EXTERIOR MOLDINGS

DESCRIPTION

The quarter lower exterior moldings are secured to the body by any one or a combination of the following attachments. Figs. 6-31 and 6-32 illustrate the various quarter molding attachments.

- A. Attaching screw
- B. Bolt and clip assembly with attaching nut
- C. Integral stud with attaching nut
- D. Hanger type clip
- E. Adhesive backed
- F. "W" base type snap-in clip
- G. Weld stud or screw retained plastic clip
- H. Snap-in stud with pre-installed retainer
- I. T-nut with screw
- J. Joint clip
- K. Slide-in T-nut
- L. Pinchweld molding clip
- M. Adhesive backed emblem or name plate
- N. Molding retaining strip (weld stud or screw attached)

Figure 6-30 identifies all typical lower quarter exterior moldings by number. Molding installation chart (Figure 6-33) identifies molding description and specific attachment.

To use molding installation chart, use the following procedure.

1. Using typical exterior molding illustration (Fig. 6-30), locate number of specific molding(s).
2. Locate molding number on installation chart (Fig. 6-33). Chart will then identify molding name, attachment(s) reference to Figs. 6-31 and 6-32 and specific style (if difference in attachment exists).

NOTE: For removal and installation of fabric roof cover or quarter window reveal moldings, refer to the "Roof" (Section 8) or "Stationary Glass" (Section 11) exterior molding portions of this manual.

GENERAL PRECAUTIONS

When removing or installing any lower quarter exterior molding, certain precautions should be exercised.

1. Adjacent finishes should be protected with masking tape to prevent damage to finish.
2. Proper tools and care should be employed to guard against molding damage.
3. Holes in body panels for screws, bolts, or clips that would permit water entry into the body interior must be sealed with body caulking compound or presealed screws, nuts, or clips.

MOLDING CLIP REPLACEMENT

If a weld stud on an outer panel becomes damaged or broken off, use the following procedure.

1. Drill a small hole in the panel adjacent to original weld stud location.
2. Insert a self-sealing screw through original clip and into outer panel, or replace damaged weld stud with self-sealing screw- type weld stud.

ADHESIVE BODY SIDE MOLDING

If, for any reason, an adhesive backed molding is partially loosened or removed from a quarter panel, it should be replaced as follows:

NOTE: To insure quality adhesion, panel surface must be warm, 70 to 90 degrees F, clean and wax free during installation of molding.

1. Clean affected panel by washing with soap and water and wipe dry.
2. Mark proper alignment position with a length of cloth body tape, using adjacent moldings as a guide if applicable (View "A", Fig. 6-34).
3. Wipe molding attachment area of panel and adhesive side of molding with naphtha.

NOTE: If separation occurs between adhesive backed tape and molding (tape remains on body panel), do not remove tape from body. Naphtha wipe back of molding and adhesive tape and proceed with step 4.

4. Hold molding in its proper position with strips of cloth or masking tape every 6 to 8 inches,

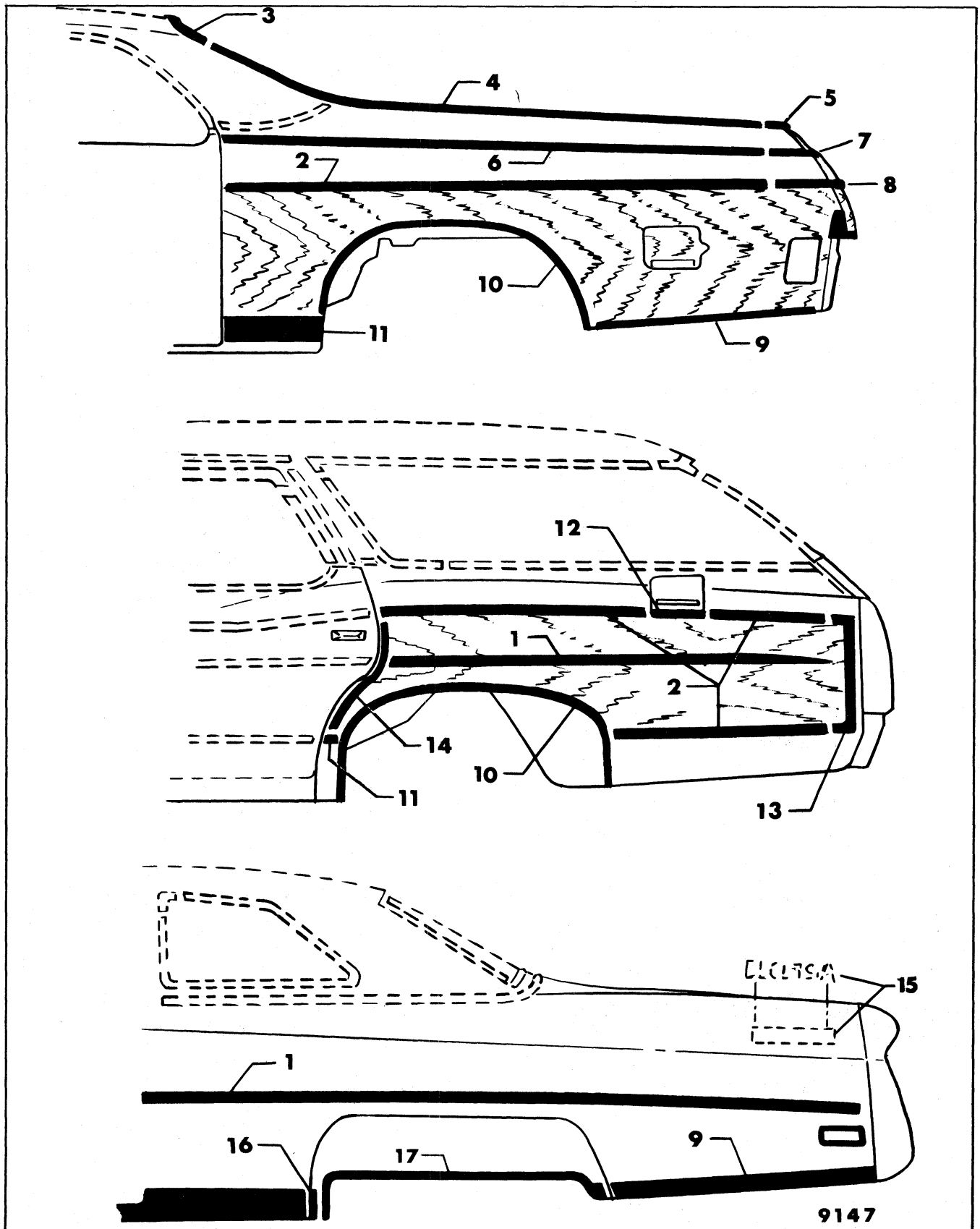


Fig. 6-30 - Typical Lower Quarter Exterior Moldings

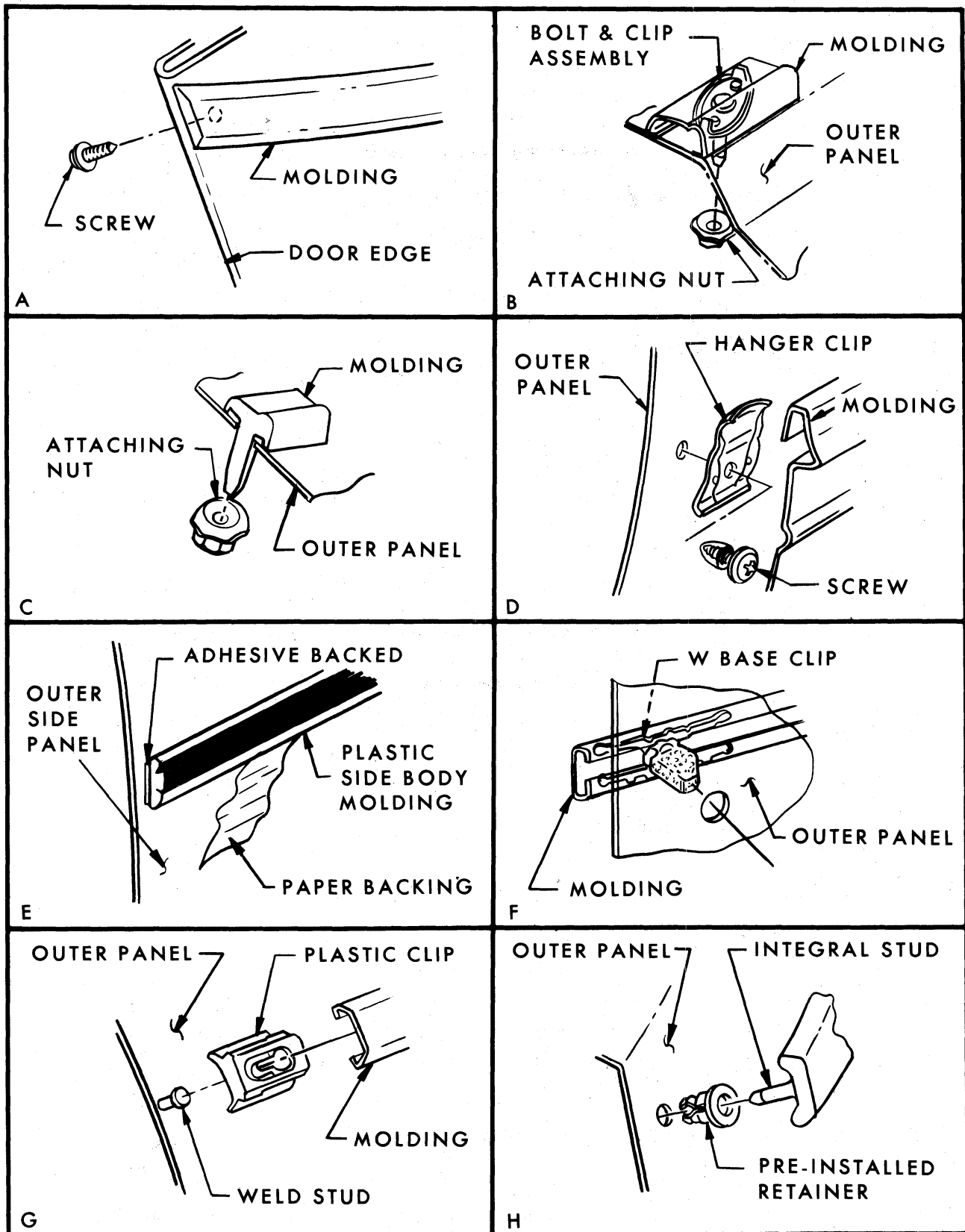
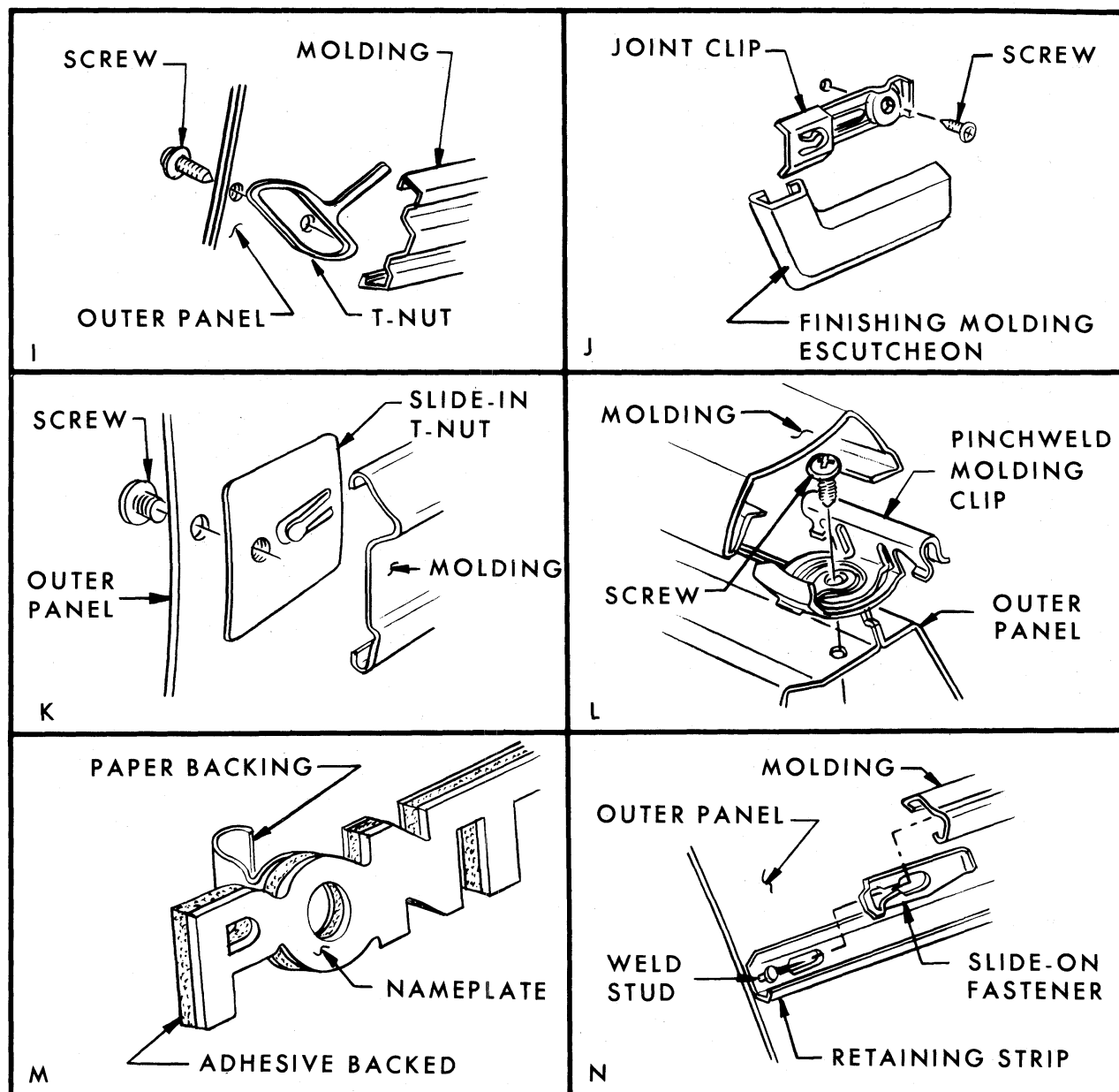


Fig.6-31 - Quarter Molding Attachments



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Fig. 6-32 - Quarter Molding Attachments

View "B", Figure 6-34. If shop temperature is below 70 degrees F, warm the body panel immediately prior to adhesive application with a heat lamp or heat gun while proceeding with step 5.

5. Loosen top of tape strips holding molding in position. Hinge molding downward to gain access to back of molding (View "C", Fig. 6-34), then using a circular motion, quickly apply a thin film of 3M Super Weatherstrip Adhesive or

equivalent to the adhesive portion of the molding.

6. Immediately align molding to previously installed tape guideline and firmly press in place. Hold in place with tape strips.
7. Allow to set 15 minutes. If clean up of cement squeeze-out is required, use a cloth dampened slightly with naphtha; then remove tape strips and tape guideline.

MOLDING REFERENCE NUMBER	MOLDING DESCRIPTION (USAGE)	ATTACHMENT REFERENCE	MOLDING REFERENCE NUMBER	MOLDING DESCRIPTION (USAGE)	ATTACHMENT REFERENCE
1.	BODY SIDE - ALL "A,B,F,H,X" EXCEPT AS LISTED BELOW AND BUICK "C" WITH OPTION B88	E	12.	GAS TANK FILLER DOOR - WOOD GRAIN TRANSFER FINISHING	
	OLDSMOBILE "E-57"	E		CHEVROLET "A-35"; PONTIAC "B-35,45" STYLES	I
	OLDSMOBILE "B-35,45"; CHEVROLET "A"; CHEVROLET "B" CAPRICE CLASSIC	G		BUICK "A-35" STYLES	A
	ALL "C&E" STYLES EXCEPT BUICK "C" WITH OPTION B88 AND OLDSMOBILE "E-57" STYLES	B,G	13.	REAR QUARTER WOOD GRAIN TRANSFER FINISHING - REAR VERTICAL	
2.	BODY SIDE - UPPER AND/OR LOWER WOOD GRAIN TRANSFER FINISHING - ALL "15,35 845"; "A-80" STYLES	B,G		CHEVROLET 1BN35-45 STYLES	A,N
				CHEVROLET AND PONTIAC "H-15" STYLES	A,F
3.	ROOF CORNER FINISHING (AT BACK WINDOW) "A-80" STYLES	A,G		PONTIAC "B-35,45" STYLES	J
				BUICK "B-35,45" STYLES	A,C
4.	REAR QUARTER PINCHWELD (FRONT) - "A-80" STYLES	A,L		OLDSMOBILE "B-35,45" STYLES	H,K
5.	REAR QUARTER PINCHWELD (REAR) - "A-80" STYLES	A	14.	REAR QUARTER WOOD GRAIN TRANSFER FINISHING (FRONT)	
6.	REAR QUARTER BELT REVEAL (FRONT) - "A-80" STYLES	A,G		CHEVROLET AND OLDSMOBILE "A-35" STYLES	G
7.	REAR QUARTER BELT REVEAL (REAR) - "A-80" STYLES	A,D		ALL "B-35,45"; CHEVROLET "A-80", BUICK "A-35" STYLES	A
8.	REAR QUARTER WOOD GRAIN TRANSFER FINISHING - UPPER REAR - "A-80" STYLES	A,F	15.	REAR QUARTER OUTER PANEL - SCRIPTS AND EMBLEMS	
9.	REAR OF REAR WHEEL OPENING - CHEVROLET "A-35,80"; OLDSMOBILE "A-35" AND BUICK "A-35" WITH WOOD GRAIN TRANSFER; BUICK "B-35,45"	A		CHEVROLET "H-15"; BUICK "B" ("CUSTOM" EMBLEM) "B-35,45 (LESS PONTIAC); CHEVROLET "A-35"; BUICK "B"; OLDSMOBILE AND CADILLAC "C"; BUICK "X" ("S" EMBLEM)	M H
	CHEVROLET "A-57"; CHEVROLET "B" STYLES; PONTIAC "A&B" EXCEPT WOOD GRAIN WAGONS; OLDSMOBILE "B-35,45" WITHOUT WOOD GRAIN; OLDSMOBILE "C"; BUICK "B-C" EXCEPT "B-35,45"	A,D		BUICK "C"; CADILLAC "E"; BUICK "X" ("SKYLARK" AND "SR" EMBLEMS)	C
	CHEVROLET 1BN35-45; PONTIAC "A-35, "B-35,45"; AND OLDSMOBILE "B-35,45" WITH WOOD GRAIN TRANSFER	G	16.	REAR WHEEL OPENING COVER (FRONT)	
	OLDSMOBILE "A-37,57 AND E-57" STYLES	E		PONTIAC "B-47"; BUICK "C"	B
	CHEVROLET AND PONTIAC "H-15" WITH WOOD GRAIN TRANSFER; BUICK "X"	A,G		CADILLAC "C&D"	A,B
10.	REAR WHEEL OPENING	A	17.	REAR WHEEL OPENING COVER	
11.	FRONT OF REAR WHEEL OPENING - CHEVROLET, PONTIAC AND BUICK "A" FOUR DOOR STYLES; PONTIAC "B-35,45"	A		PONTIAC "B-47"; BUICK "C"; CADILLAC "C&D"	A
	CHEVROLET, PONTIAC AND BUICK "A" COUPE STYLES; CADILLAC "E" STYLES	A,G			
	CHEVROLET AND PONTIAC "H"; BUICK "X-17,27" STYLES	G			
	CHEVROLET "F" STYLES	B,G			
	CADILLAC "C&D" STYLES	B			
	OLDSMOBILE "A-37,57 AND E-57" STYLES	E			

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Fig. 6-33 - Quarter Molding Installation Chart

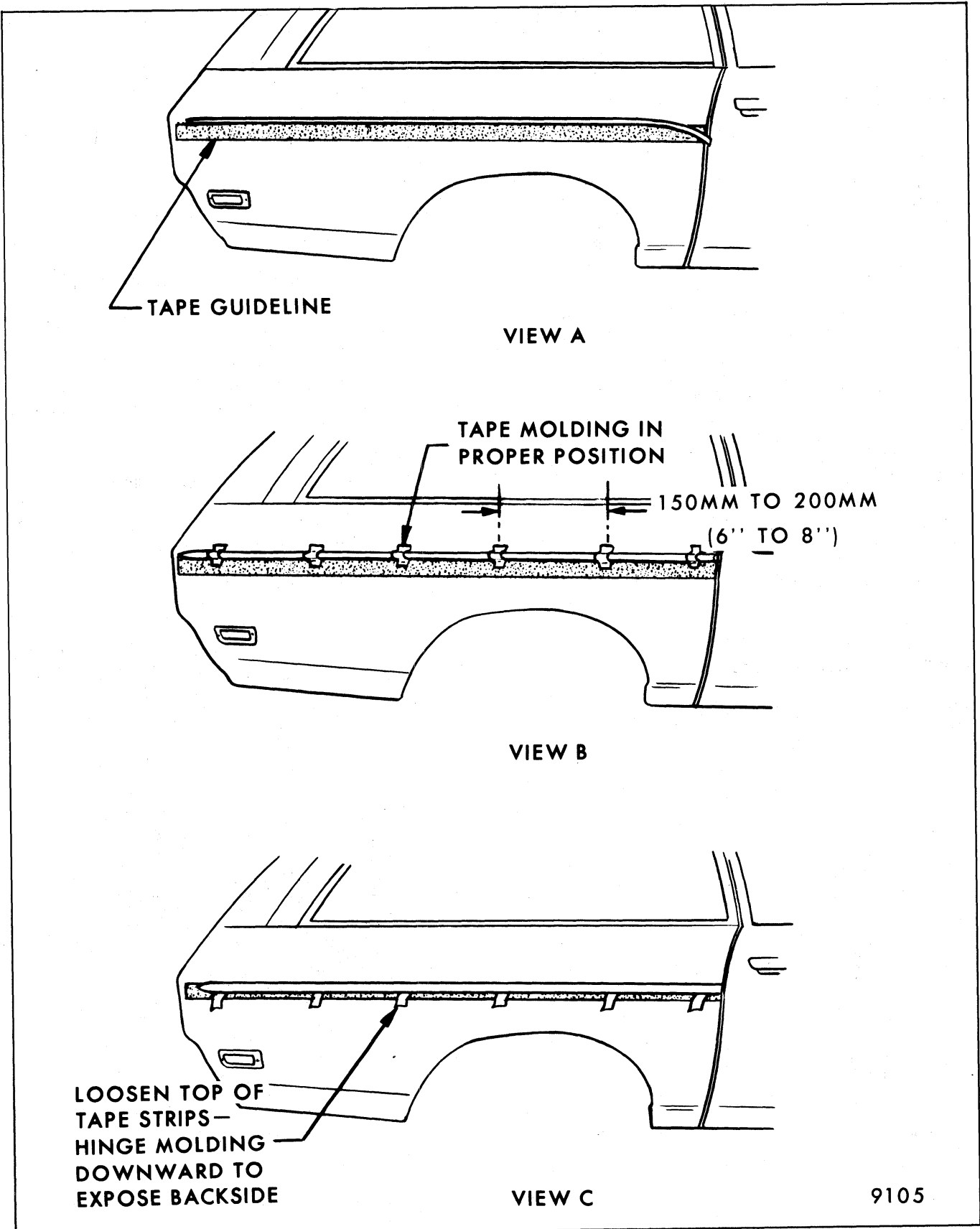


Fig. 6-34 - Adhesive Body Side Molding Replacement

REAR QUARTER HARDWARE

INTRODUCTION

This portion of the manual contains service operations that are necessary for removal, installation, adjustment and sealing of quarter assemblies and individual quarter hardware components. Where applicable, the procedures are arranged in the sequence that they would be performed when servicing a quarter.

To locate specific procedures, refer to the index at the beginning of this section. Body series or style references in the procedures are explained under "General Information", Section 1 of this manual.

REAR QUARTER INNER PANEL SEALING

All rear quarter inner panels on styles with movable quarter windows are either sealed with a water deflector, access hole cover, sealing plug (or grommet) or a combination of all three to prevent entry of water into the body. Service procedures for inner panel water deflectors are outlined in the "Door" section of this manual (see Index). Figure 6-35 is a typical rear quarter water deflector installation.

Inner panel access hole covers on "67" styles are retained by screws to the quarter inner panel and sealed with a medium bodied body sealer. Whenever any seal has been disturbed, the area must be carefully resealed to prevent waterleaks. Body caulking

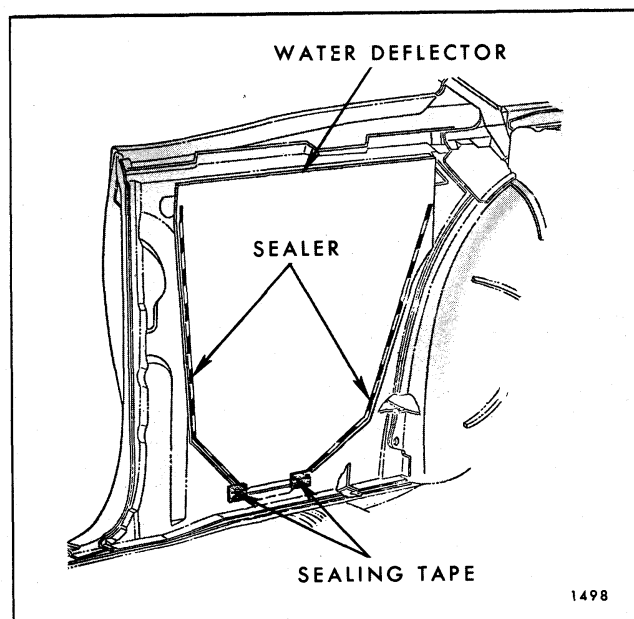


Fig. 6-35-Rear Quarter Inner Panel Sealing - Typical Water Deflector Installation

compound or strip caulking is recommended if additional sealing is required. Figure 6-36 illustrates quarter inner panel sealing on styles which use individual seals at all hardware attaching locations.

QUARTER WINDOW SEALING STRIP ASSEMBLIES (MOVABLE GLASS) - "E-67" and "B-57" Styles

Removal and Installation (Inner Sealing Strip)

Inner sealing strips are attached to a support and are removed as an assembly. The support and strip assembly can be removed from the body by removing a bolt at the front of the window guide upper support and, depending on the style, two or three attaching screws at the rear.

Removal and Installation (Outer Sealing Strip)

1. Remove rear seat and quarter trim panel. Disengage outer sealing strip to quarter trim assembly

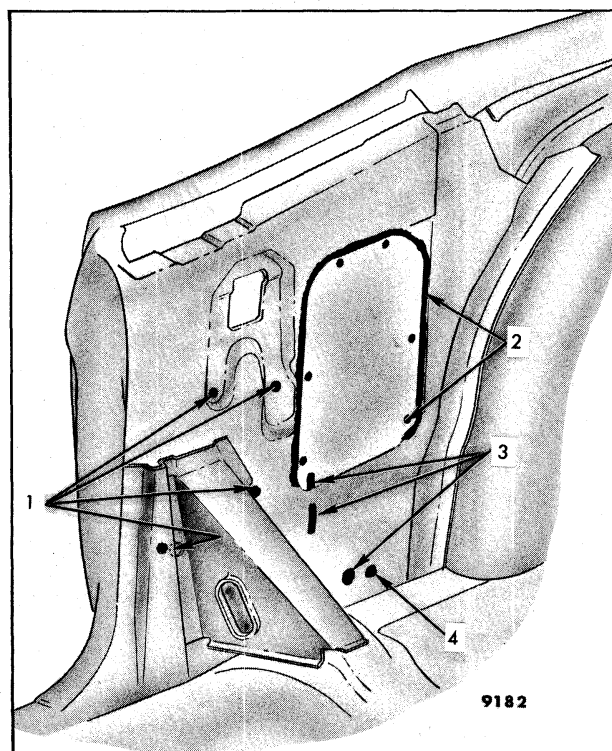


Fig. 6-36-Rear Quarter Inner Panel Sealing - "E-67" Style

- | | |
|---|---|
| 1. Electric Regulator Attaching Rivet Slots | 3. Window Guide and Lower Stop Adjusting Stud Slots |
| 2. Access Hole Cover | 4. Electrical Harness Grommet |

attaching clips, remove attaching screws from outer sealing strip and remove sealing strip.

2. To install, align holes in outer panel and sealing strip and install attaching screws (Fig. 6-37), then engage sealing strip to quarter trim attaching clips, install quarter trim and seats.

REAR QUARTER WINDOW ASSEMBLY (Movable) - "E-67" and "B-57" Styles

The "E-67" style quarter window assembly consists of a bonded front vertical sash channel and a lower sash cam and roller assembly which is bolted to the glass and operates in a center guide. The "B-57" style quarter window assembly consists of bonded front and rear vertical sash channels and a bolted-on lower sash channel and roller assembly. This window assembly operates in front and rear guide channels.

Figures 6-39, 6-40, 6-41 and 6-42 illustrate the hardware components for "B-57" and "E-67" quarters and window assemblies.

Figure 6-39 also illustrates window component assembly sequence. Figure 6-41 further illustrates the various glass adjustments for the "B-57" style.

NOTE: When installing glass to sash channel bolts or nylon roller nuts, torque to 72 inch-pounds (6 foot-pounds). When replacing window assembly, install new glass spacers (Item "9", Fig. 6-39 is a typical glass spacer).

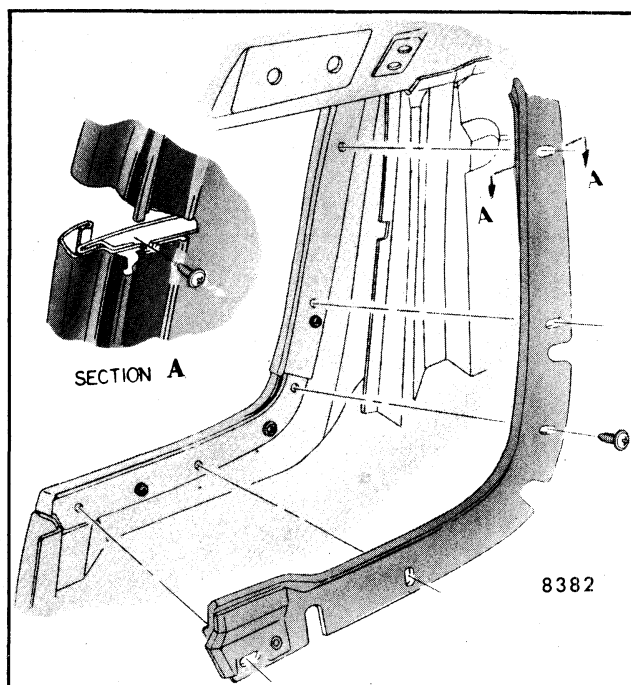


Fig. 6-37-Quarter Window Outer Sealing Strip Installation ("B-57" Shown - "E-67" Similar)

Figure 6-38 illustrates usage of tool J-22055 or equivalent for removal of quarter window glass roller nuts.

Adjustments

The rear quarter window guide on the "E-67" style is secured to the quarter inner panel at top and bottom by supports. These supports provide in or out, fore or aft and up or down adjustment. One down-stop and two up-stops are provided for alignment operations. For adjustments to the "B-57" styles refer to Figure 6-41.

Removal and Installation - "B-57" Styles

1. Remove rear seat cushion, seat back, rear quarter trim and inner panel access hole cover.
2. Lower glass to half-down position.
3. Remove front and rear up-travel stop ("8" and "9", Fig. 6-41).
4. Remove attaching nuts from rear guide, disengage rear guide from slots in quarter inner panel and remove from rear channel guide rollers.
5. While lifting quarter window assembly, remove regulator arm roller from sash plate guide (remove pin in end of guide to allow removal of roller). Disengage guide plate roller from front guide and remove quarter window assembly.
6. To install, reverse removal procedure.

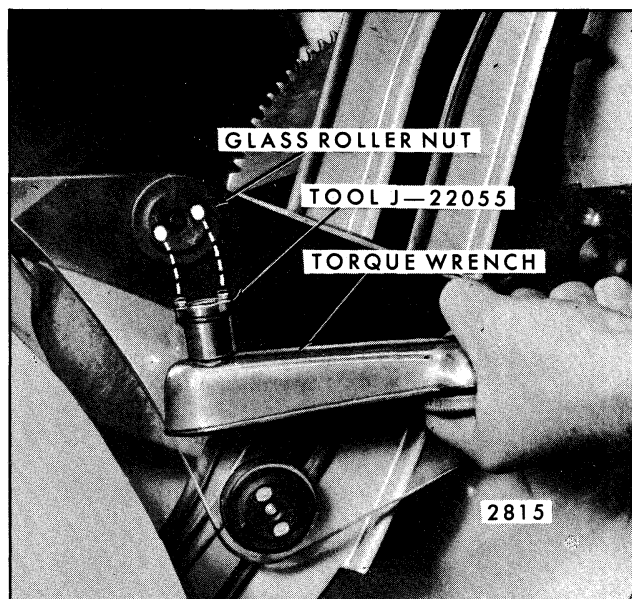


Fig. 6-38-Quarter Window Roller Removal

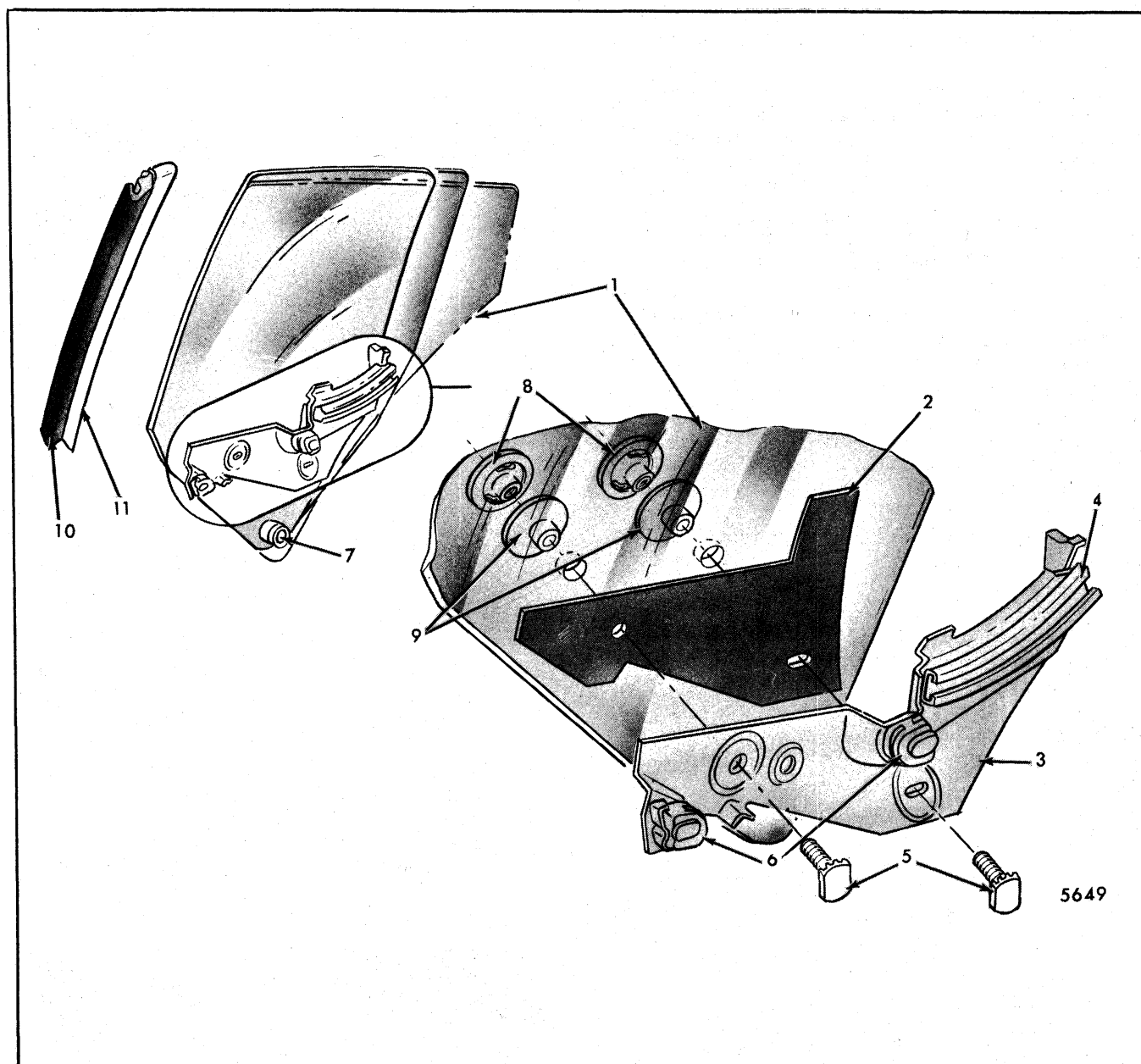


Fig. 6-39-Rear Quarter Window Assembly - "E-67" Styles

- | | |
|----------------------------------|--|
| 1. Glass | 7. Center Guide Roller |
| 2. Lower Sash Channel | 8. Sash Channel to Glass Nut |
| 3. Lower Sash Channel Filler | 9. Sash Channel to Glass Bushing (Spacers) |
| 4. Lower Sash Channel Cam | 10. Front Vertical Weatherstrip |
| 5. Sash Channel to Glass Bolts | 11. Front Vertical Channel |
| 6. Front and Rear Guide Bearings | |

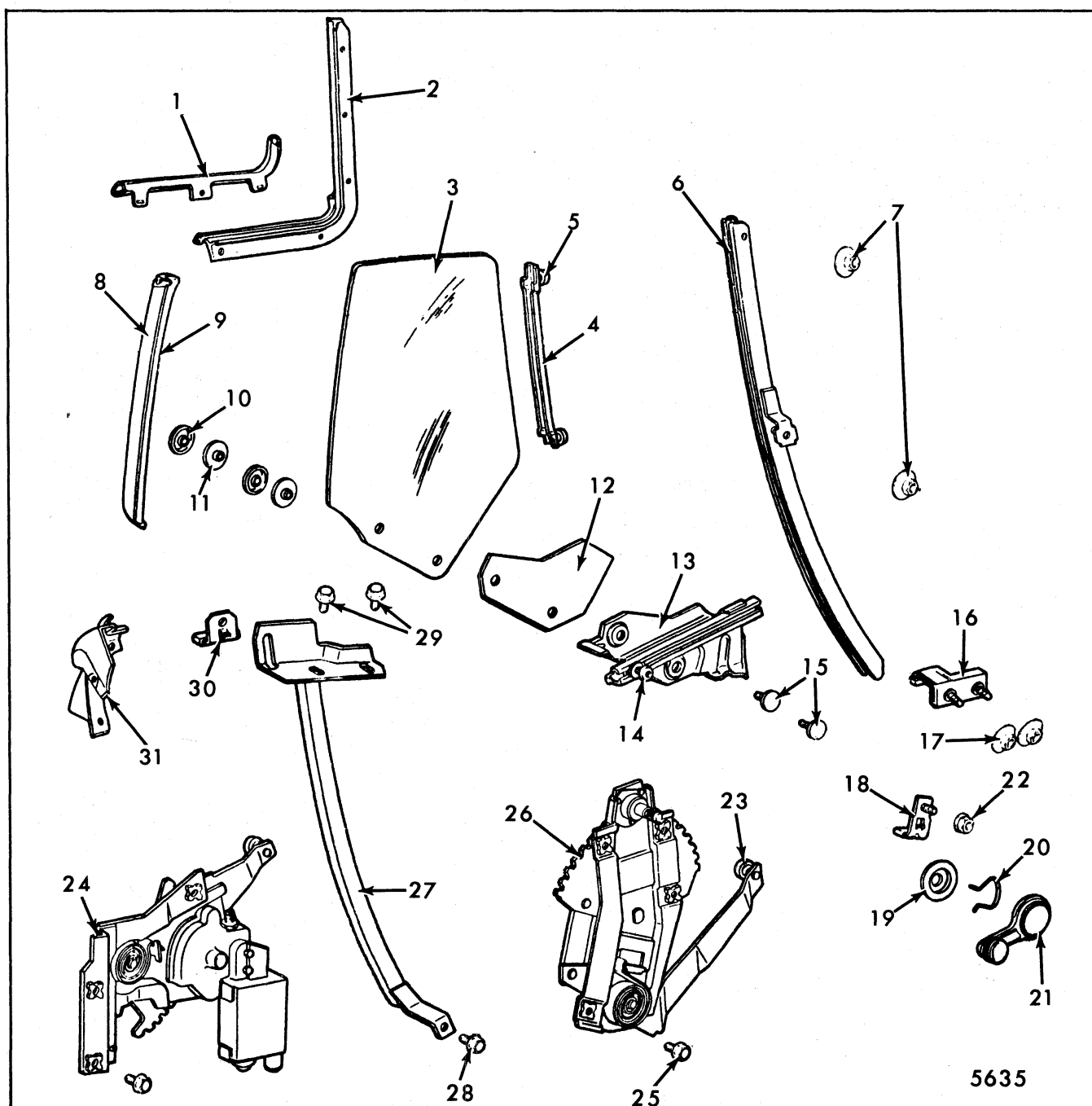
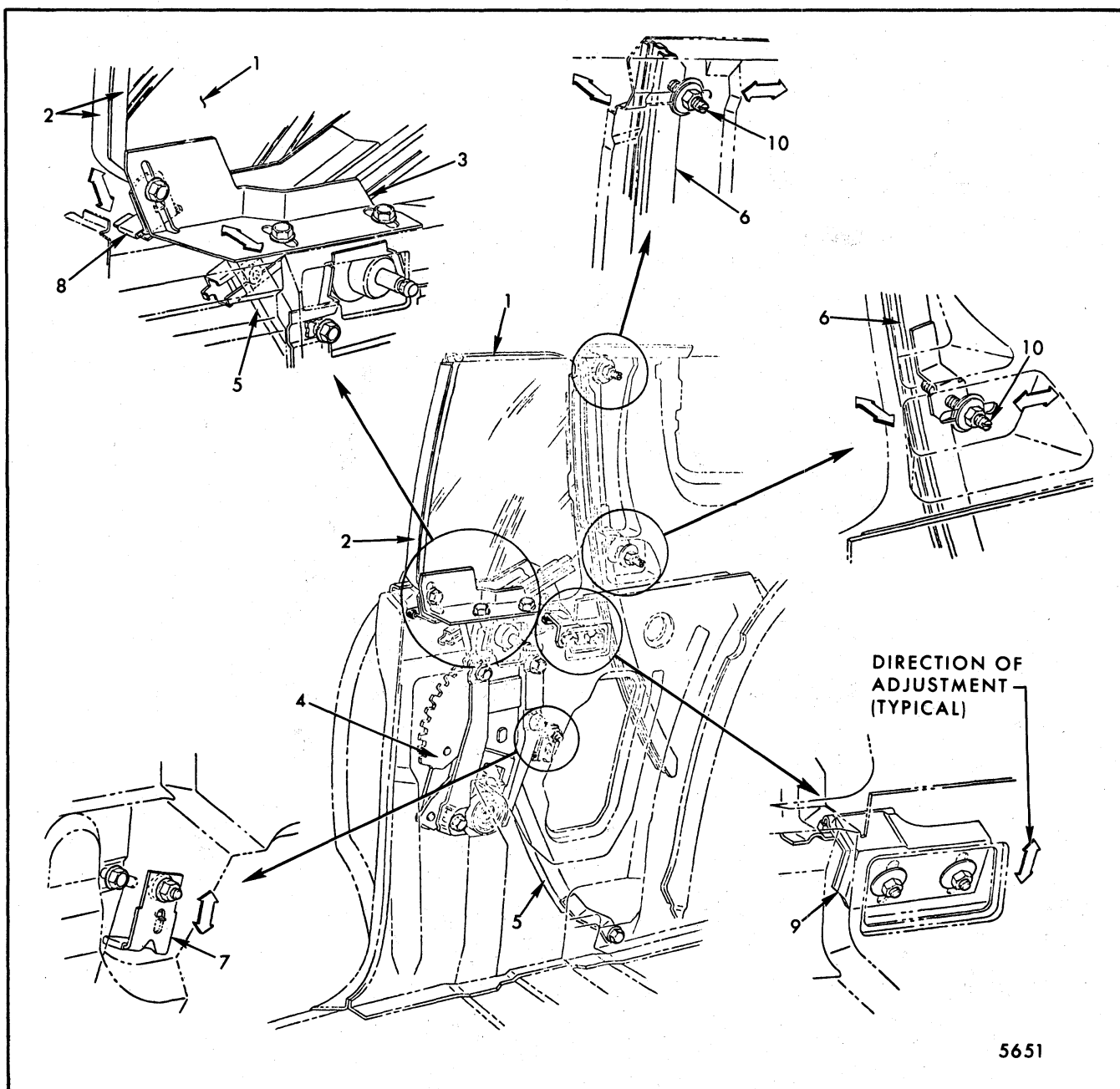


Fig. 6-40-Rear Quarter Window Assembly and Components - "B-57" Styles

- | | | | |
|------------------------------------|------------------------------------|-------------------------------|--|
| 1. Molding Assembly | 9. Front Sash Channel Assembly | 16. Rear Up Stop | 25. Attaching Bolt |
| 2. Sealing Strip Assembly | 10. Sash Plate to Glass Nut | 17. Attaching Nut | 26. Manual Window Regulator |
| 3. Quarter Window Glass | 11. Bushing | 18. Lower Stop (Manual) | 27. Front Guide Assembly |
| 4. Rear Sash Channel Assembly | 12. Lower Sash Channel Filler | 19. Bearing Plate | 28. Attaching Bolt |
| 5. Rear Channel Guide Roller | 13. Lower Sash Plate Guide | 20. Spring Retainer | 29. Attaching Bolt |
| 6. Rear Guide Assembly | 14. Guide Plate Roller | 21. Handle Assembly (Manual) | 30. Front Up Stop |
| 7. Attaching Nut | 15. Lower Sash Plate to Glass Bolt | 22. Attaching Nut | 31. Lock Pillar Upper Corner Sealing Strip |
| 8. Front Sash Channel Weatherstrip | | 23. Window Regulator Roller | |
| | | 24. Electric Window Regulator | |



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Fig. 6-41-Quarter Window Hardware - "B-57" Styles

- | | |
|--|-------------------------------|
| 1. Quarter Window Glass | 5. Front Guide Assembly |
| 2. Front Sash Channel and Weatherstrip | 6. Rear Guide Assembly |
| 3. Front Guide Upper Support | 7. Down Stop |
| 4. Regulator Assembly | 8. Front Up-Travel Stop |
| | 9. Rear Up-Travel Stop |
| | 10. Rear Guide Adjusting Stud |

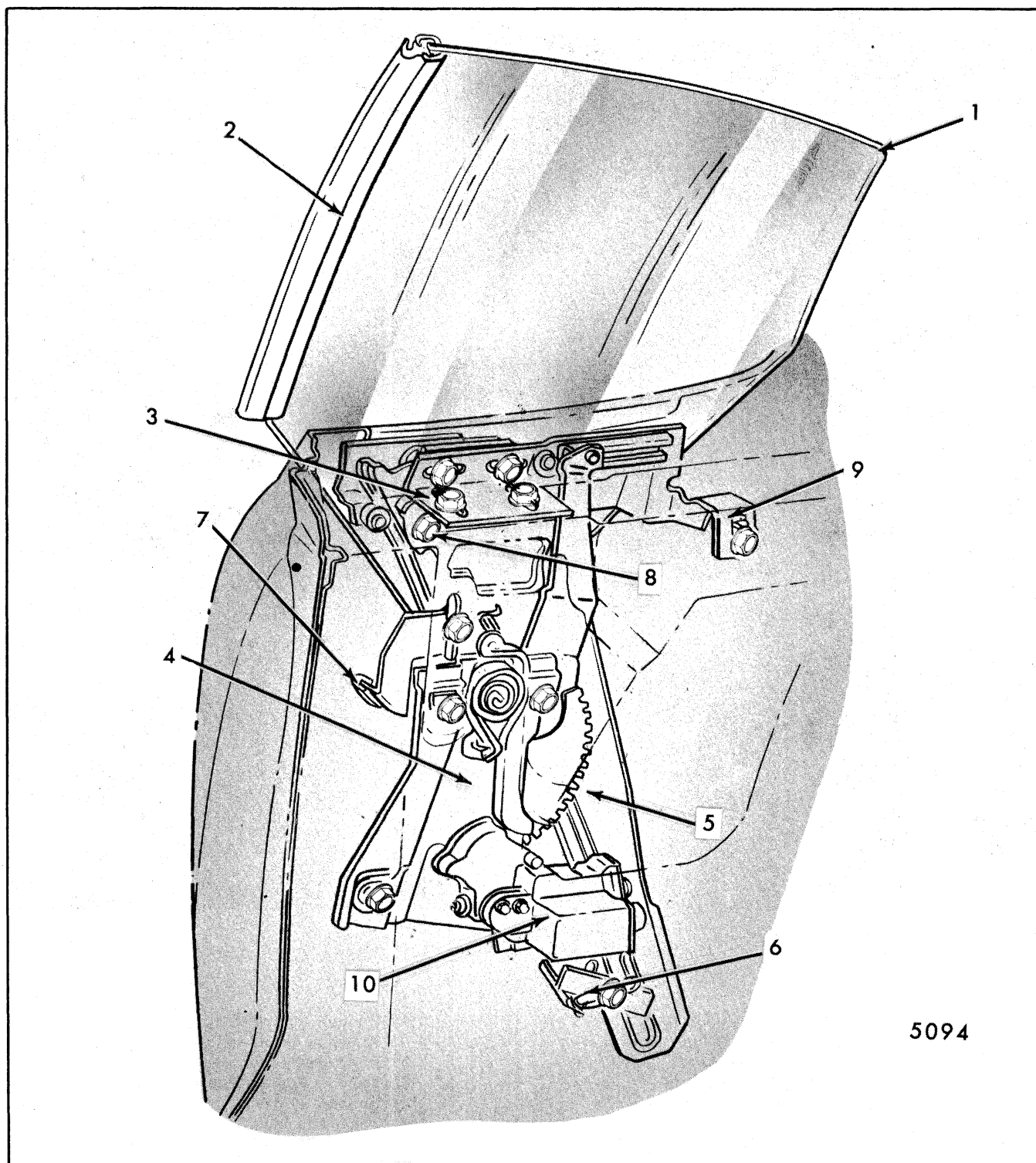


Fig. 6-42-Quarter Window Hardware - "E-67" Styles

- | | | | |
|---|---------------------------|---------------------------------|-------------------------|
| 1. Quarter Window Glass | 3. Upper Support Assembly | 6. Support Assembly Guide Lower | 8. Front Up-Travel Stop |
| 2. Vertical Sash Channel and Weatherstrip | 4. Regulator Assembly | 7. Down Stop | 9. Rear Up-Travel Stop |
| | 5. Guide Assembly | 10. Motor and Drive Assembly | |

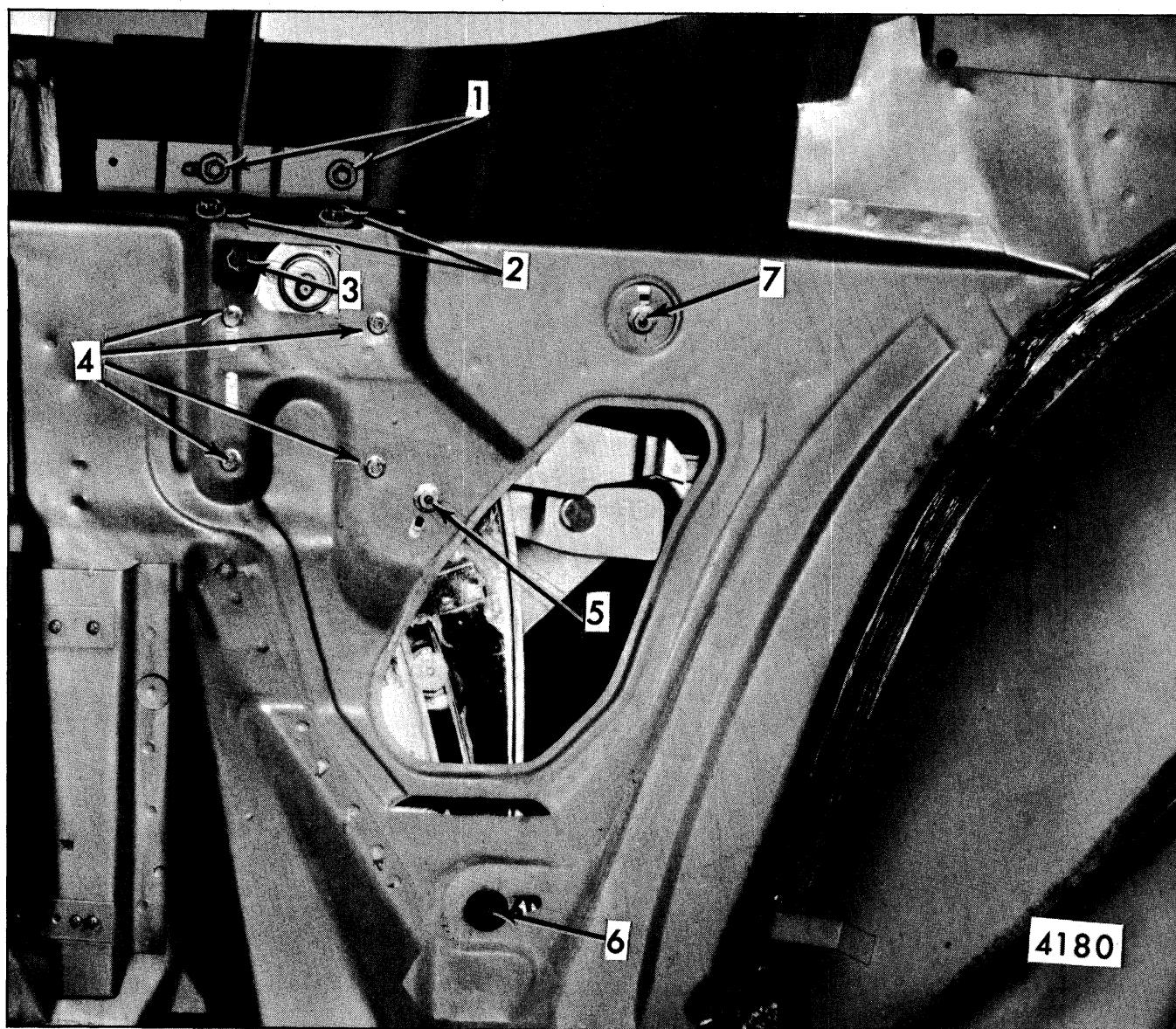


Fig. 6-43-Rear Quarter Hardware - "E-67" Styles

- | | |
|--|---|
| 1. Upper Support to Window Guide Attaching Bolts | 4. Window Regulator Attaching Rivets |
| 2. Upper Support to Inner Panel Attaching Bolts | 5. Down-Travel Stop |
| 3. Front Up-Travel Stop | 6. Window Guide Lower Support to Inner Panel Attaching Bolt |
| | 7. Rear Up-Travel Stop |

Removal and Installation - "E-67" Styles

1. Remove rear seat cushion, seat back, rear quarter trim and loading hole cover. Lower folding top.
2. Lower glass to half-down position.
3. Remove rear up-travel stop bolt ("7", Fig. 6-43) and remove stop from inner panel.
4. Remove lower down-travel stop bolt ("5", Fig. 6-43) and remove stop from inner panel.
5. Remove attaching bolts from upper support assembly to inner panel ("2", Fig. 6-43).
6. Remove attaching bolts from lower guide support ("6", Fig. 6-43).
7. Disengage regulator lift arm from sash channel cam and remove glass and guide as an assembly (Fig. 6-44).
8. If glass must be replaced see following procedure on vertical sash channel removal.
9. To install, reverse removal procedure.

VERTICAL SASH CHANNELS (Front and/or Rear)

Rear quarter glass on all "B-57" and "E-67" styles has vertical sash channels which are bonded to the glass with urethane adhesive caulking compound. In the event that the glass or the vertical sash channels must be replaced, the following procedure may be used.

Removal and Installation

1. Remove quarter window glass as described in the preceding two sections.
2. Remove hardware if glass replacement is necessary. Tape both sides of glass with wide masking tape.
3. To prepare front sash channel for removal, disengage weatherstrip from channel.
4. Use an acetylene torch with a No. 2 tip to heat the entire length of channel for about 30 seconds. Hold tip of torch inside channel to remove front sash. Move tip along rear edge of rear channel. After heating, grip with pliers and remove. Repeat heat application as required.
5. Thoroughly clean replacement glass. If original glass is to be used, scrape all traces of adhesive

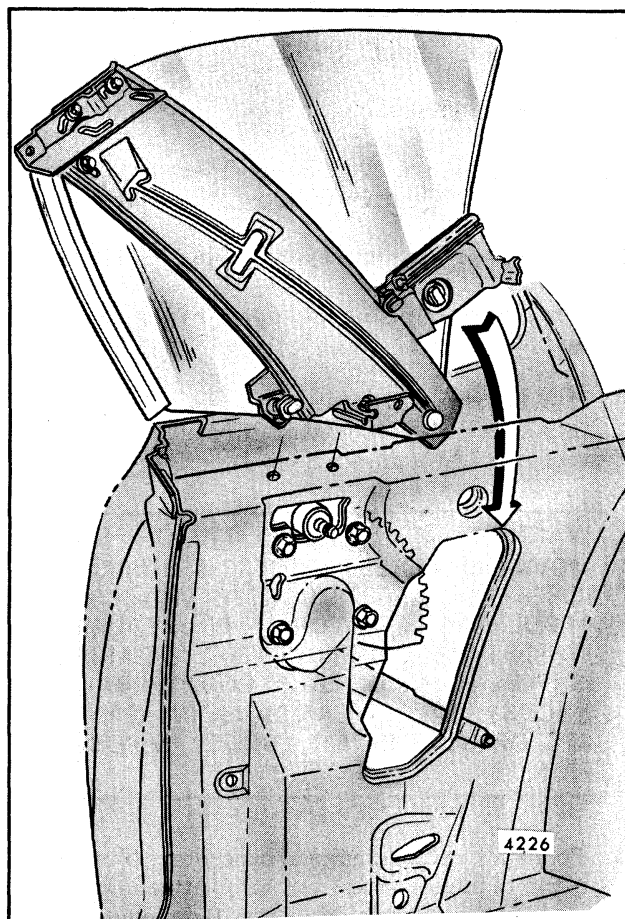


Fig. 6-44-Quarter Glass and Guide Assembly - "E-67" Style

off with a sharp bladed tool. If original channel is to be used, clamp in vise and burn out remaining urethane adhesive with welding torch. While still hot, wire brush urethane traces from channel (rear sash channel only) and remove any remaining adhesive from parts with lacquer thinner. Complete the cleaning operation by rinsing parts with water.

WARNING: AVOID DIRECT INHALATION OF THE FUMES EMITTED DURING URETHANE BURN-OUT OPERATION.

6. To bond rear channel to glass, use a two part epoxy such as 3M Structural Adhesive No. 8101, Loctite Fast Cure Epoxy 45, Loctite "Clear" Epoxy or equivalent. To bond front channel to quarter window glass, use a conventional press-on type filler tape, or above mentioned adhesives.
7. Remove tape and replace quarter window assembly.

REAR QUARTER WINDOW ELECTRIC REGULATOR - "E-67" Styles

Removal and Installation

1. Remove glass and guide assembly as outlined under Rear Quarter Window Assembly.
2. Disconnect wire harness at motor.
3. Remove rear up-stop and down-travel stop ("5" and "7", Fig. 6-43).
4. Punch out regulator attaching rivet center pins, then drill out rivets with 1/4" drill bit. Remove regulator through access hole.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM REGULATOR IS REQUIRED, REFER TO "REAR QUARTER WINDOW REGULATOR MOTOR" PROCEDURE WHICH FOLLOWS. REGULATOR LIFT ARM IS UNDER TENSION FROM COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF SECTOR GEAR IS NOT LOCKED IN POSITION.

5. To install, reverse removal procedure. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole. Attach regulator to inner panel with 1/4-20 x 7/16" screws (Part No. 9642853 or equivalent). Torque screws to 72 inch-pounds.

REAR QUARTER WINDOW REGULATOR (Manual or Electric) - "B-57" Styles

Removal and Installation

1. Remove quarter upper and lower trim and quarter inner panel water deflector.
2. On styles with electric operated windows disconnect wire at motor.
3. Punch out regulator rivet center pins, then drill out rivets with 1/4" drill bit.
4. Disengage regulator lift arm roller from quarter window lower sash guide plate.
5. Manually lift window to "full-up" position and tape to secure with cloth body tape.
6. Remove regulator through access hole in quarter inner panel.

7. If replacement regulator does not have attaching nuts, place "U" nuts (Part No. 3916700 or equivalent) over each attaching hole.
8. To replace regulator, position regulator lift arm roller into quarter window lower sash guide plate, attach wire connector at regulator. Attach regulator to inner panel with 1/4-20 x 7/16" screws (Part No. 9642853 or equivalent). Torque attaching screws to 72 inch-pounds.

REAR QUARTER WINDOW REGULATOR ELECTRIC MOTOR

The window regulator electric motor is a 12 volt reversible direction motor with an internal circuit breaker and a self-locking gear drive. The motor is secured to the regulator assembly with bolts.

Removal and Installation

1. Remove quarter window regulator. On "B-57" styles with no counterbalance spring (Fig. 6-45), proceed to step 4.
2. Drill a 1/8" hole through regulator back plate and sector gear (Fig. 6-46). DO NOT drill hole closer than 1/2" to edge of sector gear or back plate.
3. Install a sheet metal screw (No. 10-12 x 3/4) in hole to lock sector gear in position.

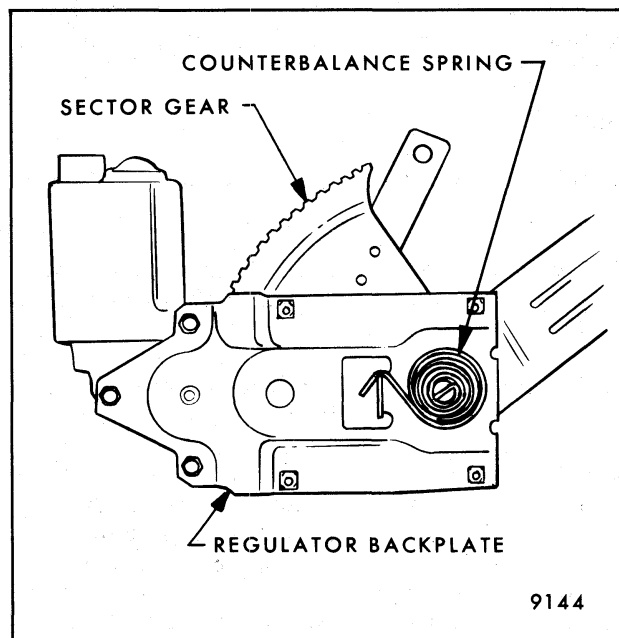


Fig. 6-45-Window Regulator Counterbalance Spring

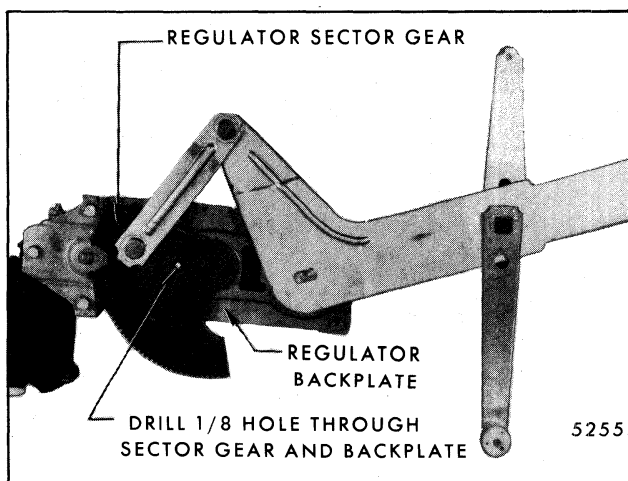


Fig. 6-46-Window Regulator Motor Removal

WARNING: BE SURE TO PERFORM STEPS 2 AND 3 BEFORE ATTEMPTING TO REMOVE MOTOR FROM REGULATOR ASSEMBLY. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE REGULATOR COUNTERBALANCE SPRING AND CAN CAUSE SERIOUS INJURY IF MOTOR IS REMOVED FROM REGULATOR WITHOUT LOCKING THE SECTOR GEAR IN POSITION.

4. Remove regulator motor attaching bolts and remove motor from regulator assembly. Clean off any steel chips from regulator pinion gear.
5. To install, reverse removal procedure. After installation of window assembly, cycle electric regulator several times before installing inner panel water deflector and trim assembly.

NOTE: Be sure to remove temporary screw securing regulator back plate to regulator sector gear before installing regulator.

SWING-OUT QUARTER VENT WINDOW - "A-35" Styles

A swing out quarter window is available on "A" station wagon styles. The hinge straps are welded to the front vertical channel and the channel is then pressed onto the glass. The lock support is attached to an integral hole in the glass and is secured to the latch assembly by a removable roll pin. The component parts of the latch, support assembly and front vertical channel are serviceable.

Glass Assembly Removal - Refer to Fig. 6-47

1. Loosen and remove trim as required to remove three screws securing latch assembly to body.
2. Swing glass outboard far enough to permit disengagement of hinge straps.

Glass Assembly Installation

1. Position forward edge of glass assembly to window opening and engage hinge straps.
2. Swing glass closed and drive latch to body attaching screws.

Latch and Support - Removal and Installation - "A-35" Styles

1. Remove glass assembly from body as previously described.
2. Using a flat end punch, remove latch to support attaching roll pin.
3. Remove support attaching screw.
4. Disengage support button and bushings from support to glass attaching hole.

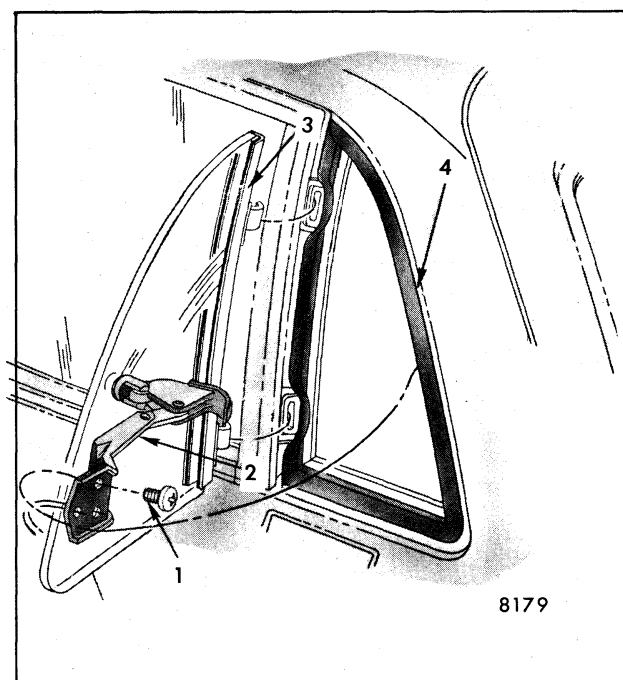


Fig. 6-47-Quarter Vent Window - "A" Station Wagons

- | | |
|--|---------------------|
| 1. Latch Assembly to Body Attaching Screws | 2. Latch Assembly |
| | 3. Vertical Channel |
| | 4. Weatherstrip |

5. To install, reverse removal procedure.

Weatherstrip Removal - "A-35" Styles

1. Remove glass as previously described.
2. Using a flat-bladed tool, carefully disengage weatherstrip, starting at body pillar and working around entire window opening.

Weatherstrip Installation - "A-35" Styles

1. Clean pinchweld flange of any foreign material around entire window opening.
2. Starting at body pillar, install weatherstrip into pinchweld flange around entire window opening.

SWING-OUT QUARTER WINDOW - "H-11, 77" and "X-17, 27" Styles

The swing-out quarter window assembly, available on the "H-11, 77" and "X-17,27" styles, is serviced complete with the molding attaching clips and attaching hinge straps. The molding attaching clips and hinge straps are bonded to the glass and removal should not be attempted. The hinge straps, which are located on the front vertical edge of the glass, engage two hinge pins which are attached to the body pillar. The moldings snap over the bonded-on molding attaching clips and can be removed by disengaging the moldings from the clips.

The latch support is attached to an integral hole in the glass and is secured to the latch assembly by a removable roll pin. The component parts of the latch and support assembly are serviceable.

Glass Assembly Removal

1. Remove back window side garnish molding to obtain access to the latch to body attaching screws.
2. Remove three screws which secure latch assembly to the body (Fig. 6-48). On "X" styles spacers may be installed and should be removed.
3. Swing glass outboard from rear to permit disengagement of hinge straps from hinge pins to body pillar (Fig. 6-49).

Glass Assembly Installation

1. Position forward edge of glass assembly to the

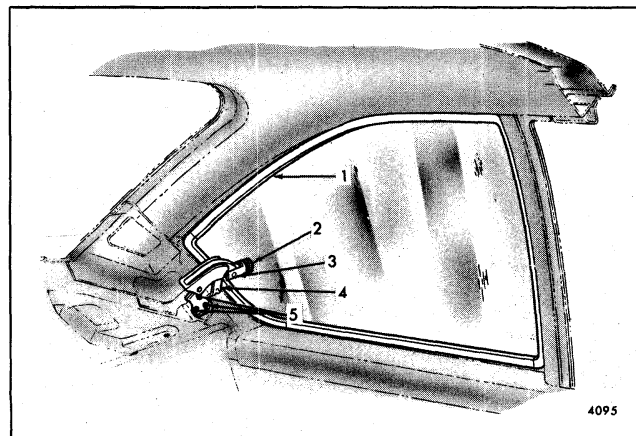


Fig. 6-48-Optional Swing-Out Quarter Window - "H-11 and 77" Styles Shown ("X-17,27" Styles Similar)

- | | |
|--------------------------------|------------------------------------|
| 1. Quarter Window Weatherstrip | 3. Support to Latch Roll Pin |
| 2. Support Button Assembly | 4. Latch Assembly |
| | 5. Latch Assembly Attaching Screws |

window opening and engage hinge straps to hinge pins (Fig. 6-49).

2. Swing glass to closed position and drive three latch to body attaching screws.

Latch and Support-Removal and Installation - "H" and "X" Styles

1. Remove complete glass assembly from body as previously described.

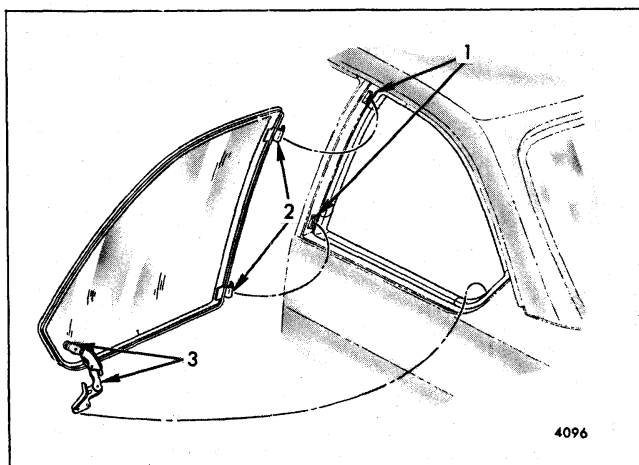


Fig. 6-49-Optional Swing-Out Quarter Window Removal - "H-11 and 77" Styles Shown ("X-17,27" Styles Similar)

- | | |
|-----------------|-------------------------------|
| 1. Hinge Pins | 3. Support and Latch Assembly |
| 2. Hinge Straps | |

2. Using a flat end punch, remove the latch to support attaching roll pin (Fig. 6-48).
3. Remove support button attaching screw (Fig. 6-50).
4. Disengage support button and bushings from support to glass attaching hole.
5. To install, reverse removal procedure.

Weatherstrip Removal - "H" and "X" Styles

1. Remove glass assembly as previously described.
2. Using a flat-bladed tool, carefully disengage weatherstrip, starting at body pillar and working around entire window opening.

Weatherstrip Installation - "H" and "X" Styles

1. Clean out pinchweld flange around entire window opening.
2. For "H" styles, start at the body pillar, locate the two slots on weatherstrips to the two hinge pins and install to pinchweld flange.
3. For "X" styles, start at rear corner and install to pinchweld flange.

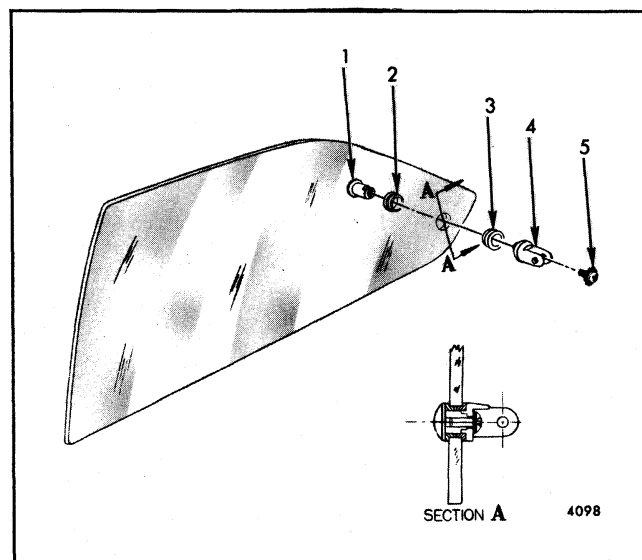


Fig. 6-50-Optional Swing-Out Quarter Window Latch Assembly Support

- | | |
|---------------------|-----------------------------------|
| 1. Support Button | 4. Support to Latch Button |
| 2. Outboard Bushing | 5. Support Button Attaching Screw |
| 3. Inboard Bushing | |

STATIONARY REAR QUARTER WINDOW - All Styles

For removal and installation procedures covering the stationary rear quarter window, refer to the "Stationary Glass" section of this manual (Section 11).

SECTION 7

REAR END

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REAR COMPARTMENT

INTRODUCTION

The service operations necessary for the removal, installation, adjustment and sealing of the rear compartment lid assembly, individual compartment lid hardware components, moldings, emblems and name plates attached to the rear compartment lid or rear end panel are contained in this section.

MOLDINGS, EMBLEMS AND NAME PLATES

Description

The moldings, emblems and name plates used on the rear compartment lids and rear end panels are attached by several different means. Figure 7-1 illustrates the different types of attachment.

General Precautions

When removing or installing any body exterior molding, emblem or name plate, certain precautions should be exercised.

1. Adjacent finishes should be protected to prevent damage to finish.
2. Proper tools and care should be employed to guard against molding damage.
3. When a molding is overlapped, the overlapping molding must be partially disengaged or removed first.

Sealing Operation

Although detailed sealing operations for each individual molding, emblem or name plate are not described, the following information is given to permit a satisfactory sealing operation.

Medium-bodied sealer or body caulking compound are the sealers most frequently used to provide either a watertight seal or for anti-rattle measures.

Holes in deck lids or rear end panels for screws, bolts, or clips that would permit water to enter the interior of the body must be sealed with body caulking compound or presealed screws, nuts or clips.

Adhesive-Backed Moldings, Emblems and Name Plates

Removal and Installation

Adhesive-backed moldings, emblems and name plates can be removed from the body with the use of a hot air gun.

1. Hold hot air gun twelve inches from the surface of the part to be removed.
2. Apply heat using a circular motion for approximately 30 seconds, then carefully peel part from body surface.

To install, body surface must be warm (70 degrees plus), clean and wax free.

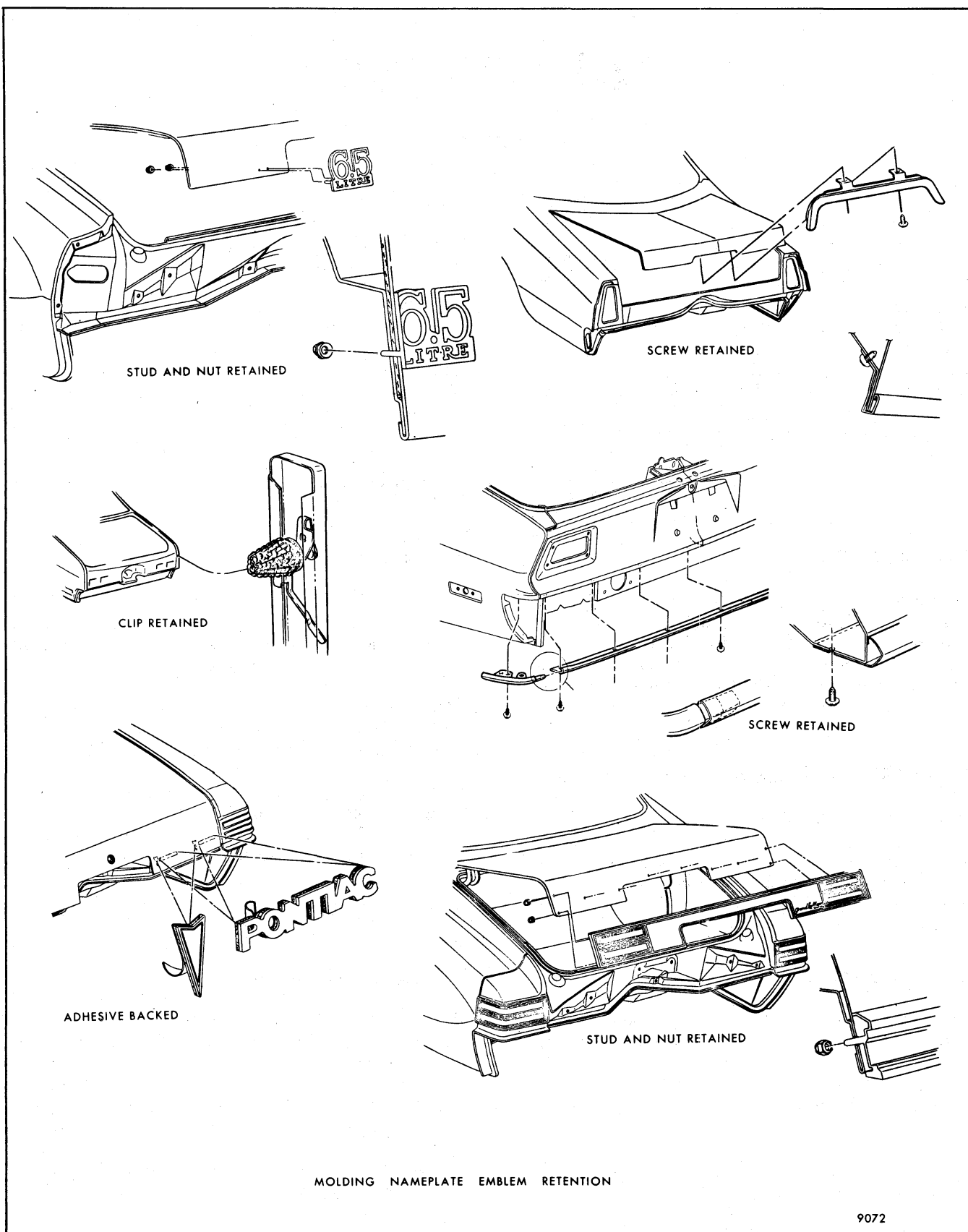


Fig. 7-1 - Molding - Name Plate-Emblem Retention

1. Check for proper alignment with adjacent moldings, emblems and/or name plates if applicable.
2. Remove paper backing from part to be installed and firmly press in place.
3. If reinstalling previously removed part, apply a thin even film of 3M Super Weatherstrip Adhesive or equivalent to adhesive portion of emblem, align and press firmly in place.

If, for any reason, an adhesive-backed molding, emblem or name plate is partially loosened or removed from the deck lid or rear end panel, it should be replaced as follows.

NOTE: To insure quality adhesion, panel surface must be warm (70 degrees plus), clean and wax free during installation of molding.

1. Clean affected panel by washing with soap and water and wipe dry.
2. Mark proper alignment position using adjacent moldings as a guide if applicable.

3. Wipe attachment area of panel and adhesive side of item to be replaced with naphtha.

NOTE: If separation occurs between adhesive-backed tape and name plate or emblem (tape remains on body panel), do not remove tape from body. Naphtha wipe back of name plate or emblem and adhesive tape and proceed with step 4.

4. Apply a thin even film of 3M Super Weatherstrip Adhesive or equivalent to the adhesive portion of the emblem or name plate.
5. Immediately align name plate or emblem and firmly press in place. Hold in place with tape strips.
6. Allow to set 15 minutes. If cleanup of cement squeeze-out is required, use a cloth dampened slightly with naphtha; then remove tape strips and tape guideline.

REAR COMPARTMENT LID

DESCRIPTION

The rear compartment lid is constructed of an inner and outer panel bonded together internally by structural deadener. The outer perimeter is bonded with structural adhesive and welded.

The lids are hinged at the forward edge and balanced by use of torque rods to provide ease of operation and lid hold-open.

The "H-11" style compartment lid hinge halves are welded to the body and rear compartment lid. The ends of the torque rod form the hinge pins.

Adjustments

1. Fore, aft and lateral adjustment of the lid assembly is controlled by the hinge strap to lid attaching bolts. To adjust lid, loosen hinge strap to lid attaching bolts (Fig. 7-2) and shift lid to desired position; then tighten bolts.
2. Up and down adjustment of the lid assembly is accomplished by placing shims between the hinge strap and the lid assembly and by raising or lowering the rear compartment lid lock striker. (For adjustment of striker, refer to Rear Compartment Lid Lock - Adjustments.)

To raise the right and/or left sides of the lid assembly, mark location of hinge on lid and install suitable shim between hinge strap and lid at forward bolt location. To lower lid, install shims at rear bolt locations.

Removal and Installation

1. Open lid and place protective covering along edges of rear compartment opening to prevent damage to painted surfaces.

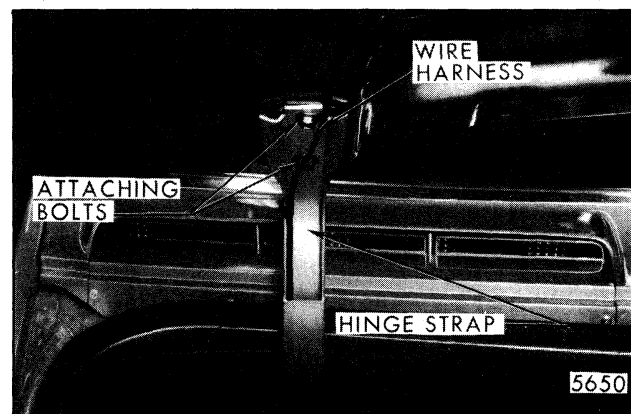


Fig. 7-2-Typical Rear Compartment Hinge to Lid Attachment - Buick "E" Shown

2. Where necessary, disconnect wire harness from rear compartment lid.
3. Mark location of hinge straps on lid inner panel.
4. With aid of helper, remove attaching bolts securing hinges to lid and remove lid (Fig. 7-2 depicts typical hinge).
5. To install, reverse removal operations.

Removal and Installation - "H-11" Style

1. Open rear compartment lid and place protective coverings between outer corners of lid and rear compartment gutter.
2. With helper holding lid, disengage outer ends of torque rod from retaining clips in compartment lid inner panel ("A", Fig. 7-3).
3. Using large flat-bladed tool, pry torque rod rearward to enable grasping "loop" of torque rod with torque rod removing tool J- 24854 or equivalent, as shown in Figure 7-3. Finger tighten torque rod removing tool retaining screws ("B", Fig. 7-3) to prevent tool from disengaging from rod during removal operation.
4. Firmly grasp tool J-24854 or equivalent with both hands and disengage torque rod loop from retaining tab on body side hinge half as shown in Figure 7-4. Carefully allow torque rod to "unwind" (180 degrees) as shown in Figures 7-4 and 7-5.
5. Using a large screwdriver, bend up torque rod retaining tabs on body side hinge.
6. Supporting both sides of lid, disengage ends of torque rod, which act as hinge pins, from both

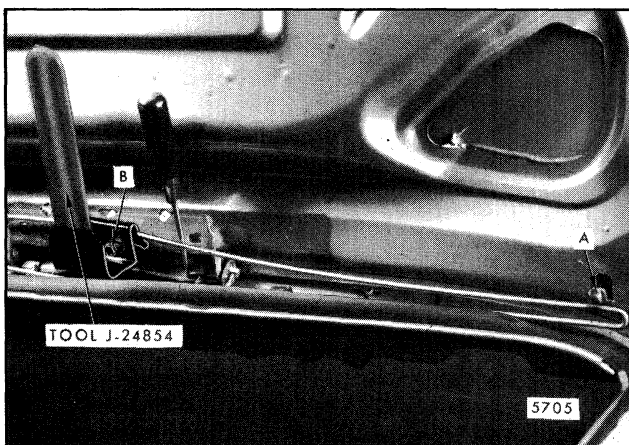


Fig. 7-3-Rear Compartment Lid Removal - "11" Styles

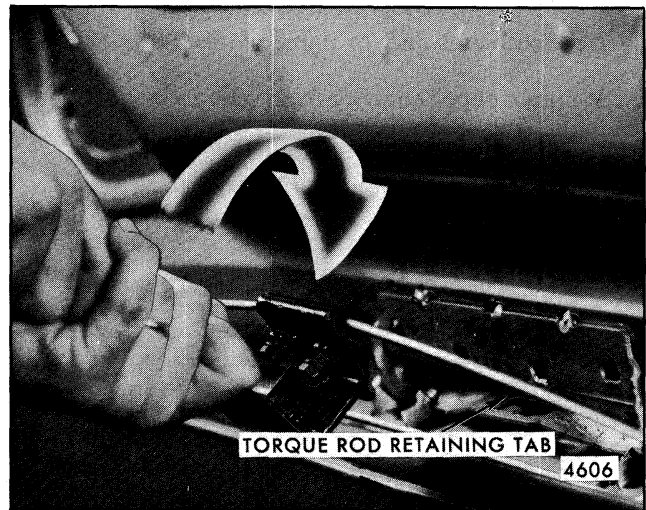


Fig. 7-4-Rear Compartment Lid Removal - "11" Styles

body side and lid side hinge halves and remove lid from body.

7. To install, reverse removal procedure.

NOTE: Overlap of torque rod at points A, B and C, Figure 7-6, is critical in order to accomplish proper windup of torque rod.

HATCHBACK LIDS - "H-07, 77" and "X-17" Styles

Description

The hatchback lid incorporates a stationary back glass. The lid is hinged at the roof with weld-on body and lid side hinge halves which incorporate removable hinge pins (except "X-17" which has bolt-on body and lid hinge attachments). The lock is bolted in place and is adjustable. The striker is welded in place and has no adjustment.

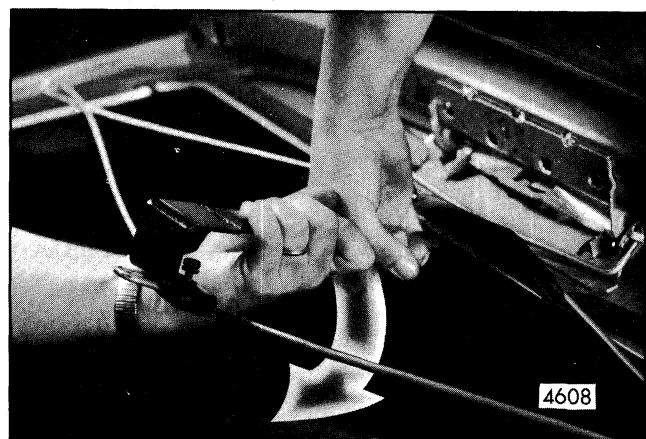


Fig. 7-5-Rear Compartment Lid Removal - "11" Styles

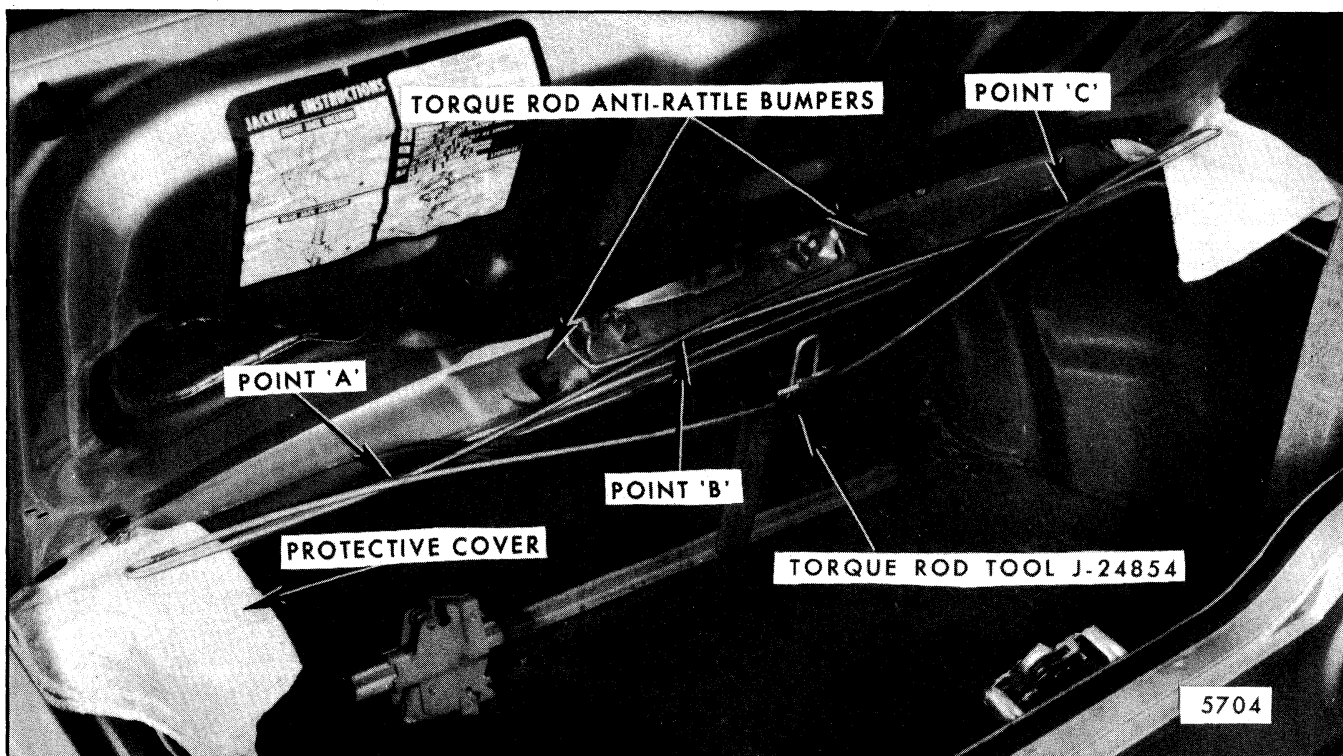


Fig. 7-6-Rear Compartment Lid Removal Shown with Torque Rod Relieved - "11" Styles

Opening assist is performed by tubular gas-operated compartment lid support assemblies mounted at each side of the lid and attached to the body. The lid up-stop is incorporated within the support assembly (Fig. 7-7).

Adjustment - "X-17" Style

1. Fore, aft and lateral adjustment of the lid assembly is controlled by the hinge strap to body attachments. To adjust the lid, remove the back window upper garnish molding, loosen the hinge to body attaching screws (Figs. 7-9 and 7-10) and shift lid to desired location and tighten screws.

NOTE: All adjustments must be made with lid in fully opened position and gas supports disconnected.

2. Flush adjustment of the lid assembly to roof is accomplished by adding or removing shims at the strap attachments.

To raise the lid assembly, install suitable shims between strap and lid. To lower lid, install shims between hinge strap and body opening. Check lock to striker engagement, adjust as required.

Removal and Installation - "H-07, 77" and "X-17" Styles

1. Open hatchback lid. On styles with electrically heated back window disconnect feed and ground wires from terminals. On "X-17" styles remove back window upper garnish molding.
2. Place protective covering between outer ends of lid and roof panel.

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN GAS-OPERATED SUPPORT ASSEMBLY ATTACHMENTS WITH HATCHBACK LID IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

3. Perform the following steps while helper(s) support lid in fully open position.
4. Remove lid side retaining clips (using scratch awl or similar tool) from both gas-operated support assemblies and disengage supports from lid side attaching ball (Fig. 7-8). Allow support assemblies to rest on compartment side panel trim.

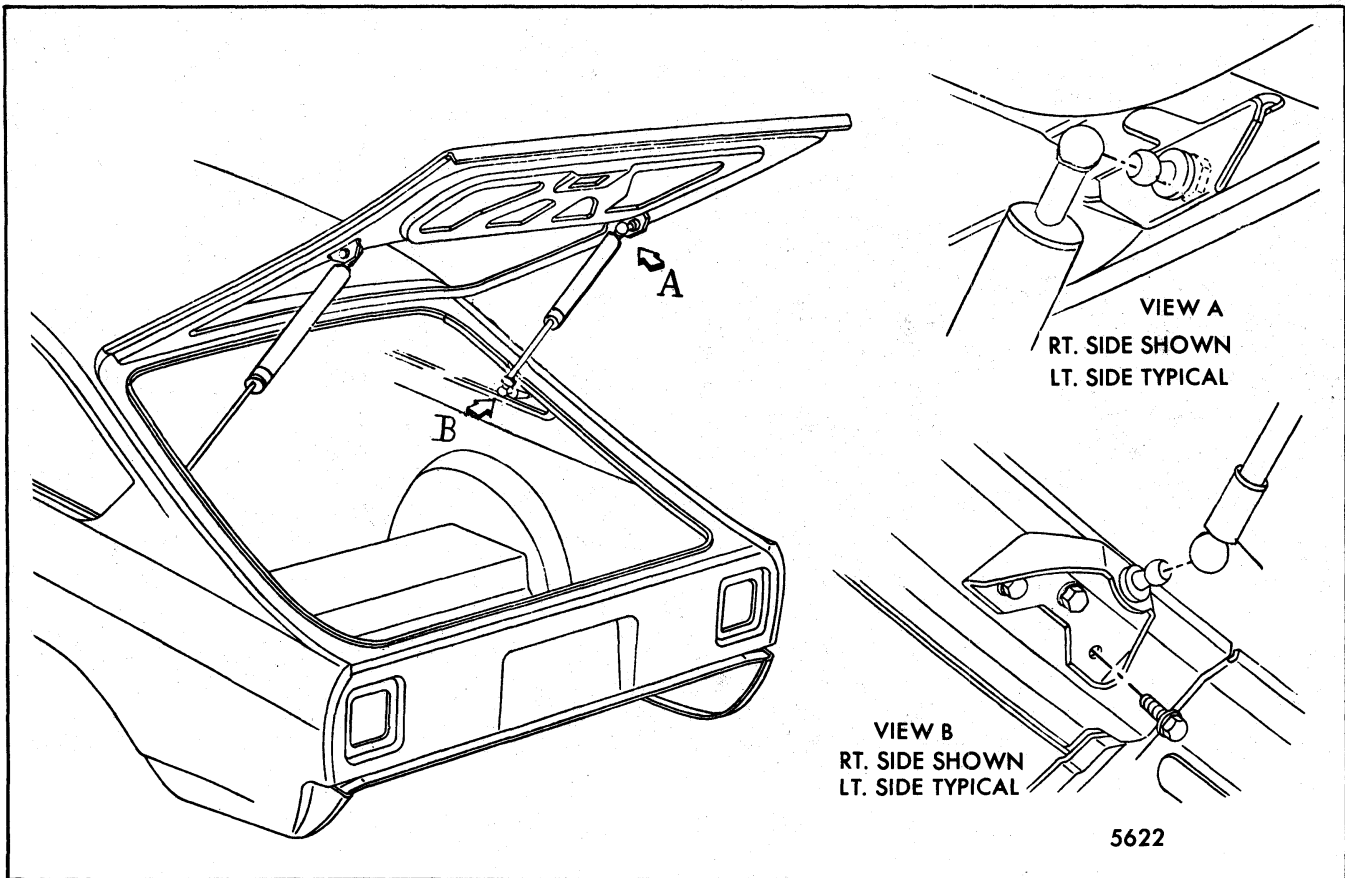


Fig. 7-7-Hatchback Lid Support Assembly Attachment - "H-77" Shown, "H-07" and "X-17" Similar

5. For "H-07 and 77" styles, with helpers supporting lid, use a 3/16" diameter rod 18 inches long to remove hinge pins from hinges. As illustrated in Figure 7-11, place end of rod against pointed

end of hinge pin; then strike rod firmly to shear retaining ring tabs and drive pin through hinge. Repeat operation on opposite side hinge and remove lid from body.

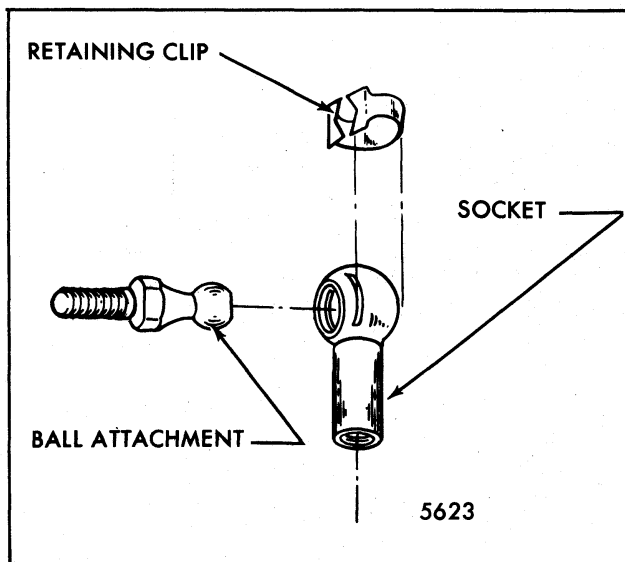


Fig. 7-8-Support Assembly Retaining Clip - "H-07, 77" and "X-17" styles

6. For "X-17" styles, mark location of hinge attachments on lid inner panel and remove two lid side attaching screws from each hinge (Fig. 7-10) and remove lid.
7. To install "X-17" style lid, reverse removal operations.
8. To install "H-07 and 77" hatchback lid, reverse removal procedure and prior to installing hinge pins, install new retaining ring in notches provided in pins. Position retaining ring so that tabs point toward head of pin as illustrated in Figure 7-11.

HATCHBACK LID GAS-OPERATED SUPPORT ASSEMBLY - "H-07, 77" and "X-17" Styles

Description

The gas-operated support assemblies used to assist

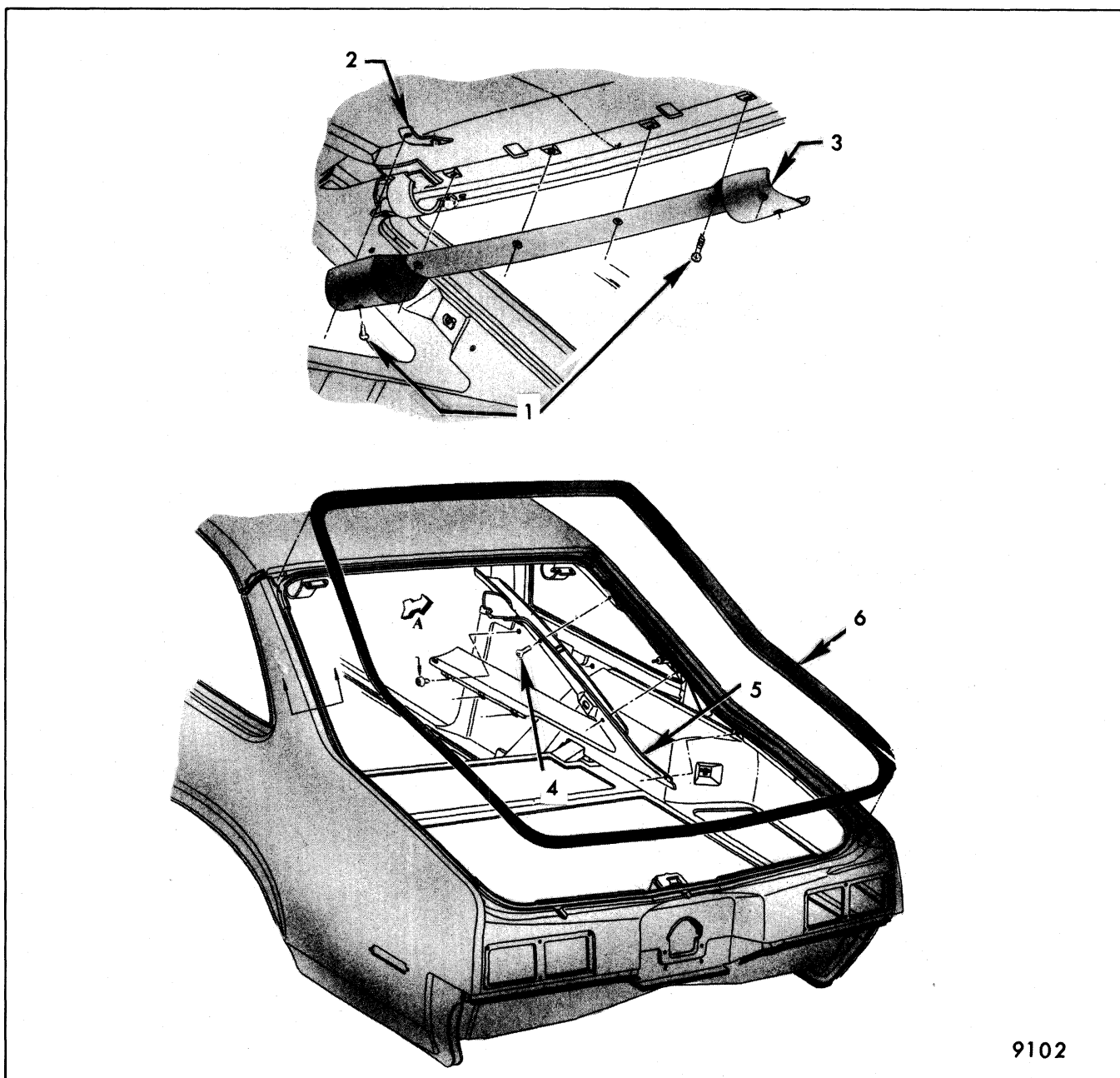


Fig. 7-9-Rear Compartment Trim and Weatherstrip Removal

- | | | |
|-------------|--------------------------|------------------------|
| 1. Screw | 3. Garnish Molding | 5. Quarter Window Trim |
| 2. Retainer | 4. Trim Retaining Screws | 6. Weatherstrip |

opening the hatchback lid on "H-07, 77" and "X-17" styles attach to the lid and the body by means of a ball and socket type attachment and are secured by retaining clips.

The gas-operated support assemblies are color coded (lettering on each support) for each body style because of different output levels and MUST NOT be intermixed. The "H-07" support has dark green let-

tering, the "H-77" support has dark blue lettering and the "X-17" support has dark red lettering.

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN GAS-OPERATED SUPPORT ASSEMBLY ATTACHMENTS WITH HATCHBACK LID IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

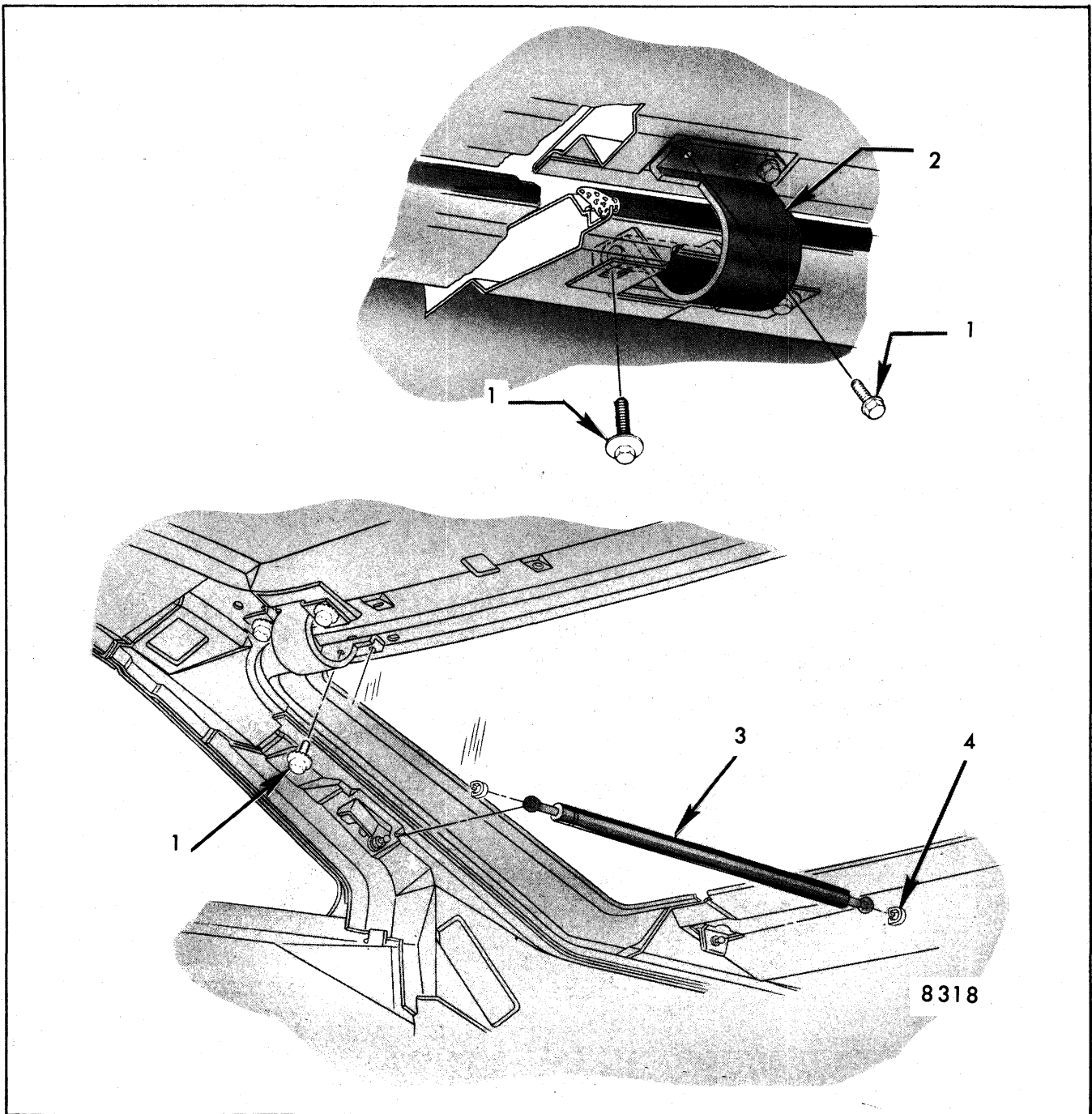


Fig. 7-10-Hatchback Lid and Gas-Operated Support Assembly Attachments

1. Hinge Attaching Bolts 2. Hinge Strap 3. Gas-Operated Support Assemblies 4. Retaining Clip

Removal and Installation

1. Prop lid in full-open position.

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN GAS-OPERATED SUPPORT ASSEMBLY ATTACHMENTS WITH HATCHBACK LID IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

2. Remove lid and body side retaining clips (using scratch awl or similar tool) from ends of gas-operated support assemblies (Figs. 7-7 and 7-8).
3. Disengage ball from socket attachment at each end of support and remove from body.
4. To install, reverse removal procedure.

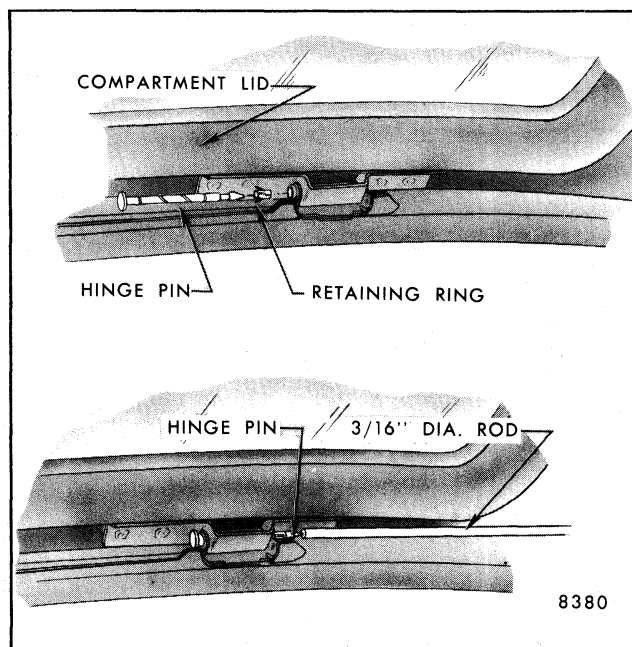


Fig. 7-11-Hatchback Lid Hinge - "H-07, 77" Style - Right Side Shown

REAR COMPARTMENT LOCK CYLINDER EMBLEM

Description

Various rear compartment lock cylinder emblems are utilized on many different styles. They can be classified into four basic groups: swivel emblem - stud and nut retained (Fig. 7-15), swivel emblem - rivet retained (Fig. 7-16), fixed emblem - integral clip retained (Fig. 7-17), and fixed emblem - adhesive backed retained (Fig. 7-14). In all cases, these emblems are installed over the lock cylinder which necessitates emblem removal prior to lock cylinder replacement.

Removal and Installation

1. On styles equipped with swivel emblems retained by stud nuts, open rear compartment lid and remove attaching nuts and carefully remove emblem from lid assembly.

NOTE: On Cadillac "E" Styles, access to emblem attaching nuts requires removal of inner panel lock cylinder access hole cover (Fig. 7-13). To remove, drill out rivets with 5/32" diameter drill bit.

2. On styles equipped with swivel emblems retained by rivets, drill out rivets with 5/32" diameter drill bit and remove emblem.

3. On styles equipped with fixed emblems retained with integral clips, protect painted surface of outer panel and carefully pry emblem from rear compartment lid to remove.
4. On styles equipped with stick-on emblems, remove emblem by heating EMBLEM with heat gun as outlined under Adhesive-Backed Moldings, Emblems, and Name Plates.
5. To install other than stick-on type, align emblem and gasket with attaching holes in lid assembly and press firmly to engage integral clips, install stud nuts or new 5/32" x 7/16" "pop" rivets or equivalent. Seal base of attaching studs or rivet holes with suitable sealer.
6. To install stick-on type emblem, remove old foam backing from lid and emblem. Apply a new piece of foam tape and press on lid or apply a thin film of 3M Weatherstrip Adhesive (or equivalent) to the emblem and press in place.

REAR COMPARTMENT LID LOCK CYLINDER - All Styles

Description

On most styles, the rear compartment lid lock cylinder is located in the lid assembly. On remaining styles, the cylinder is located in the rear end panel. The basic method of cylinder attachment is by means of a retainer which is secured by a screw or rivet. Chevrolet "F" style utilizes stud nut method of lock cylinder retention (Fig. 7-22). On styles equipped with lock cylinder emblems, it is necessary to remove the emblem, as previously described, prior to cylinder removal. Figures 7-18, 7-19, 7-20, 7-21 and 7-22 illustrate various lock cylinder retainer locations.

Removal and Installation

1. Open rear compartment lid.
2. On styles so equipped, remove lock cylinder emblem as previously described.
3. Remove lock cylinder retainer attaching screw, stud nuts or, using a 1/8" drill bit, carefully drill out rivet securing lock cylinder retainer to lid. Use care to avoid enlarging rivet hole.
4. Pull retainer away from lock cylinder to release; then remove cylinder from body.
5. To install, reverse removal procedure. Insure that lock cylinder shaft engages with lock and

DISPOSAL PROCEDUREGAS OPERATED COUNTERBALANCE SUPPORT ASSEMBLY

Refer to instructions in this Manual for removal and installation information. When removed, depressurize the support assembly as described below before discarding.

WARNING: PROTECTIVE EYE COVERING MUST BE WORN WHILE PERFORMING THE FOLLOWING STEPS.

1. Place support assembly horizontally in bench vise and tighten vise.
2. Place several layers (4 layers minimum) of shop towels or rags over end of cylinder in vise (Fig. 1).
3. Measure 38.10 mm (1-1/2") in from fixed end of cylinder and, using a scratch awl or pointed center punch and hammer, drive awl or punch through the towel and into the cylinder until the gas begins to escape (Fig. 1).
4. Hold the towel and scratch awl in place until all gas has escaped (a few seconds). Then, slowly remove scratch awl. Escaping oil will be absorbed by the towel.
5. While still holding towel over hole, push bright shaft completely into black cylinder to purge remaining oil (Fig. 2).
6. Remove from vise and discard.

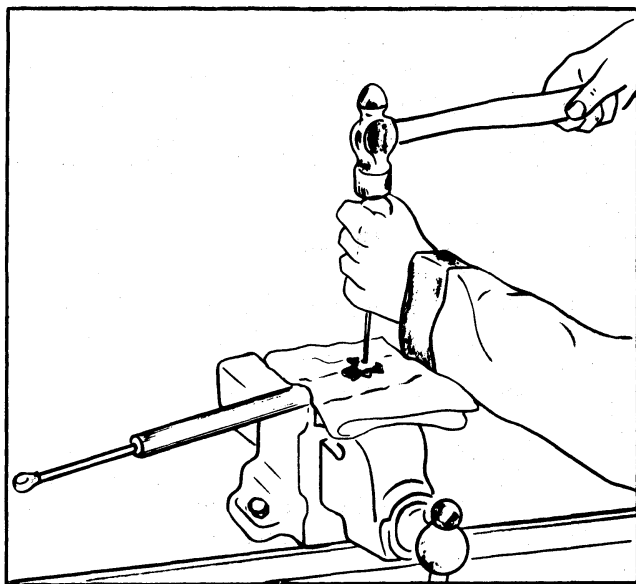


FIGURE 1

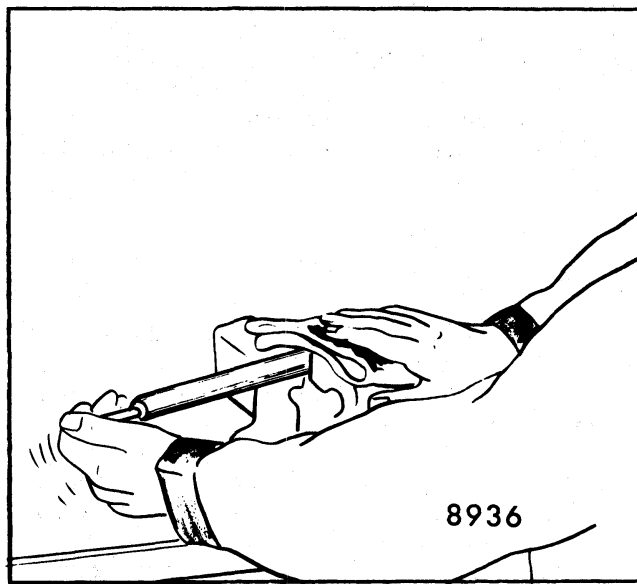


FIGURE 2

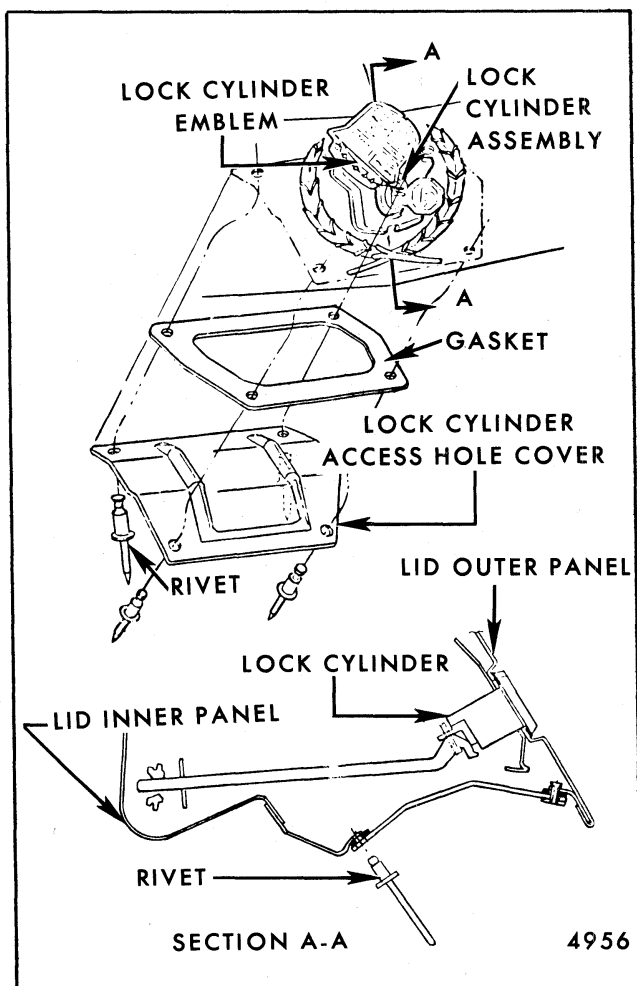


Fig. 7-13-Lock Cylinder Access Hole Cover - Cadillac "E" Style

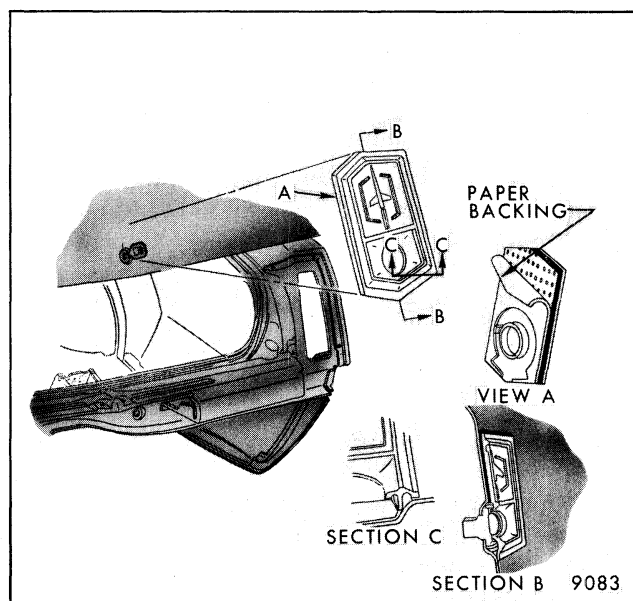


Fig. 7-14 - Oldsmobile Adhesive Backed Lock Cylinder Emblem

that gasket mates properly with outer panel to form a watertight seal. Check for proper operation of lock cylinder with key. Then install retainer attaching screw, stud nuts or new 1/8 x 5/16" "pop" rivet or equivalent where rivet is specified.

REAR COMPARTMENT LID LOCK - All Styles

Description

All rear compartment lids incorporate an "open face" lock. The term "open face" refers to the construction of lock frame which does not completely encase the lock mechanism. The lock mechanism becomes encased by the panel or reinforcement to which it is bolted.

When electric lid release option is specified, a solenoid assembly is bolted onto the existing lock using original lock bolts (Figs. 7-23 and 7-24).

Rear compartment locks are mounted in the lid except on Chevrolet "A-57", "F" styles (Fig. 7-26) and "H-11, 77" styles (Fig. 7-27) which are mounted to the rear end panel reinforcement.

The lock is bolted to a lock reinforcement. On "H-11, 77" styles, the lock is adjustable vertically.

The electric lid release unit is designed to unlock a rear compartment lid from inside the car. The specific operating instructions are covered in detail in the Owner's Manual.

Adjustments

Rear compartment lid locks are adjustable laterally, regardless of location, to provide for proper lid lock operation and lock-to-striker engagement.

To determine if lock or striker adjustment is required, proceed as follows:

1. Make certain rear compartment lid is properly aligned.
2. With lid in an open position, apply a small quantity of modeling clay on lock frame at both sides of lock hook. Then close lid with moderate force.
3. Open lid and check amount of engagement of striker with lock frame as indicated by indentations in clay. Striker bar indentations in clay should be uniform on both sides of lock frame. Where required, loosen striker or lock attaching

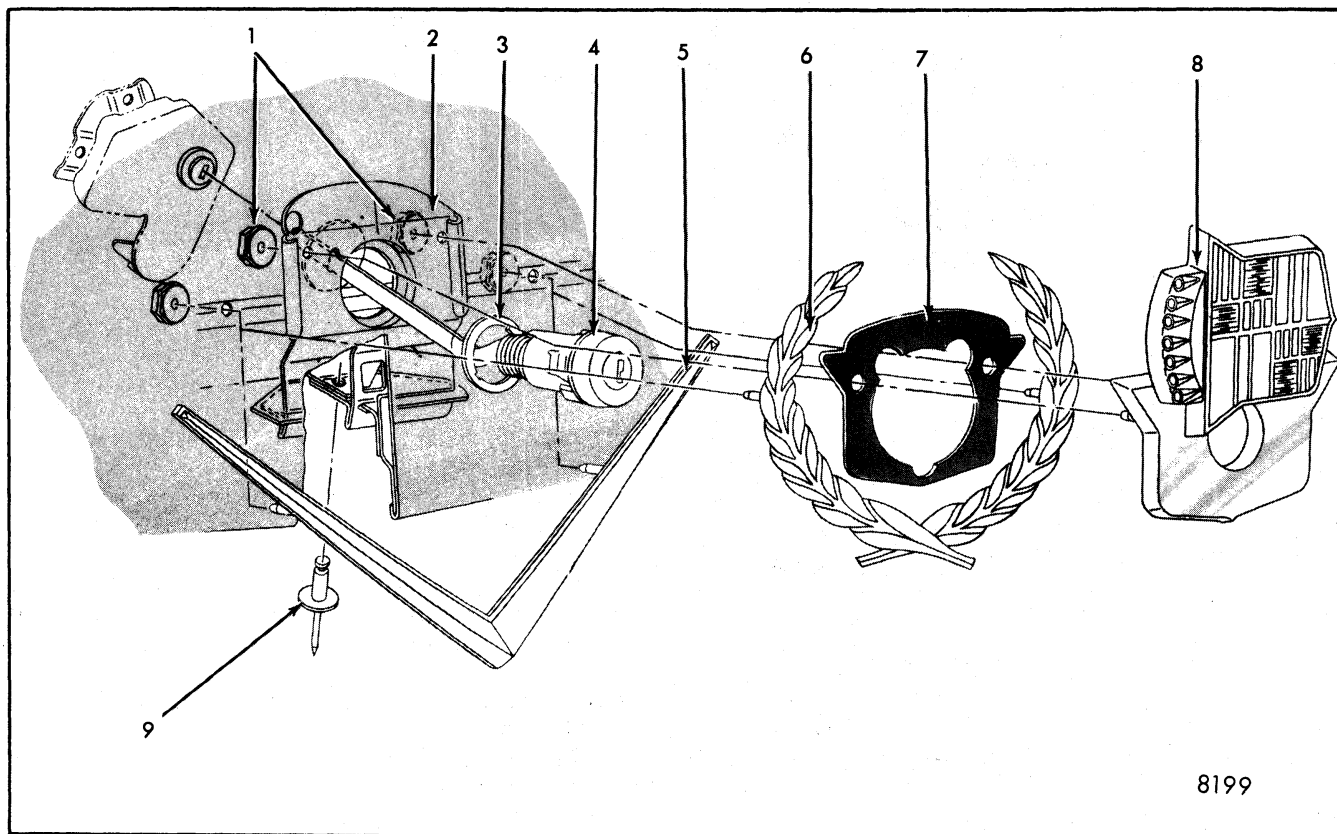


Fig. 7-15-Cadillac Rear Compartment Swivel Emblem and Lock Cylinder

- | | |
|---------------------------|---|
| 1. Emblem Attaching Nuts | 5. "V" Emblem - "47,49" Styles Only |
| 2. Lock Cylinder Retainer | 6. Wreath Emblem - "23,33,69" Styles Only |
| 3. Lock Cylinder Gasket | 7. Emblem Gasket |
| 4. Lock Cylinder Assembly | 8. Emblem Escutcheon |
| | 9. Retainer Rivet |

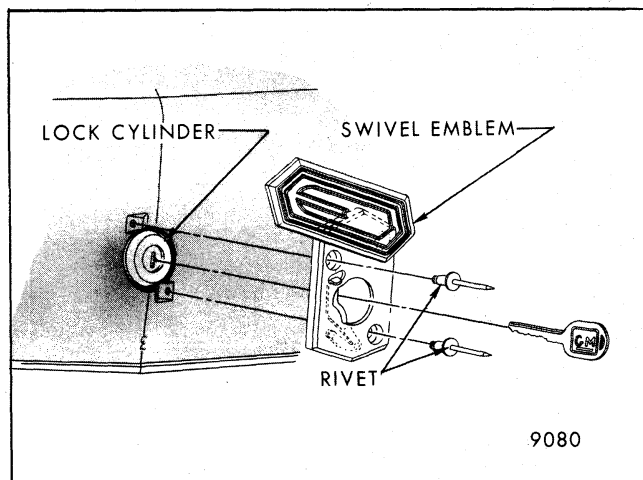


Fig. 7-16-Typical Swivel Emblem - Rivet Retained - Oldsmobile Style Shown

screws and adjust lock to obtain proper engagement. Close lid and check for proper lid and key operation.

- Secure lock attaching bolts 57 to 87 inch-pounds torque.

Removal and Installation

- Open rear compartment lid and remove lock cylinder and shaft as previously described.
- Remove attaching bolts securing lock (Figs. 7-25, 7-26 and 7-27) to rear compartment lid or rear end panel.

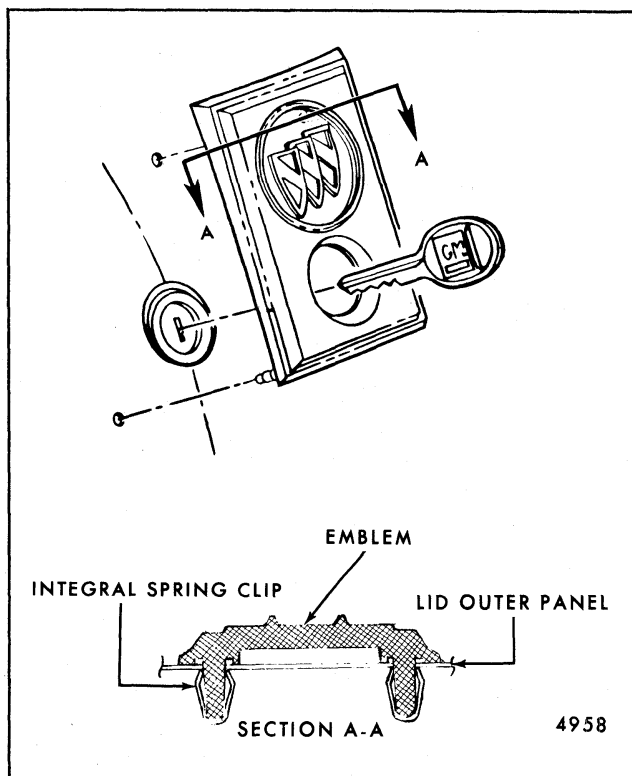


Fig. 7-17-Typical Fixed Emblem - Integral Clip Retained

NOTE: On all styles equipped with electric lid release units, disconnect electric feed wire connector, remove solenoid-to-lock attaching bolts and remove solenoid and lock (Fig. 7-24).

3. To install, reverse removal operations. Close lid and check lock engagement with striker. Make necessary adjustments as outlined under adjustments.

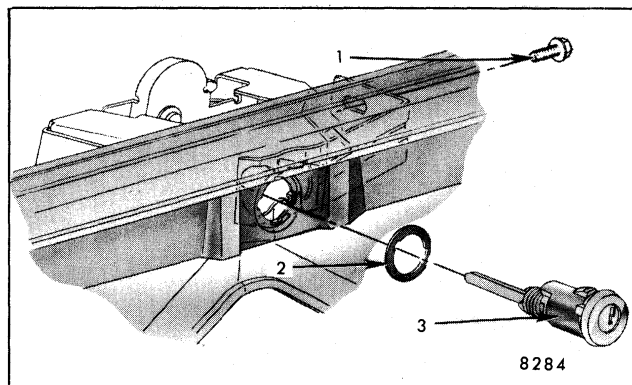


Fig. 7-18-Side Loading Lock Cylinder Retainer - Pontiac "F" Styles

1. Retainer
2. Gasket
3. Lock Cylinder

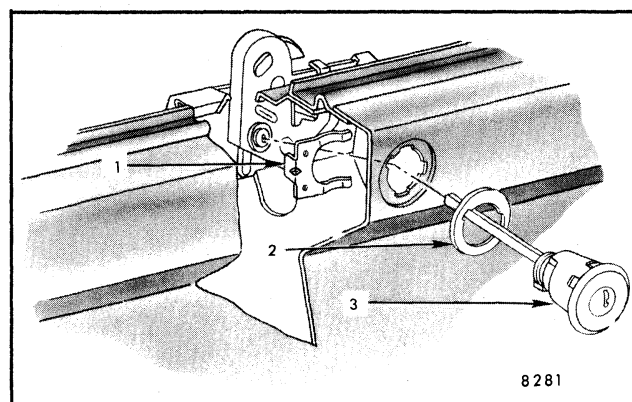


Fig. 7-19-Typical Side Loading Lock Cylinder Retainer - "H-77" Shown

1. Retainer
2. Gasket
3. Lock Cylinder

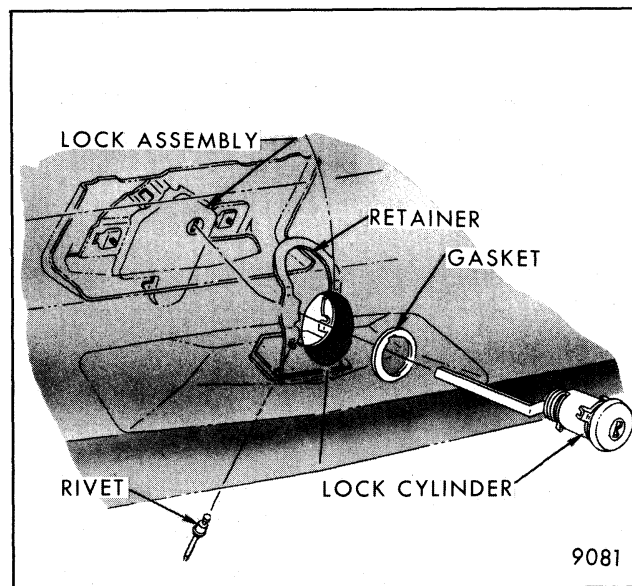


Fig. 7-20-Typical Bottom Loading Lock Cylinder Retainer

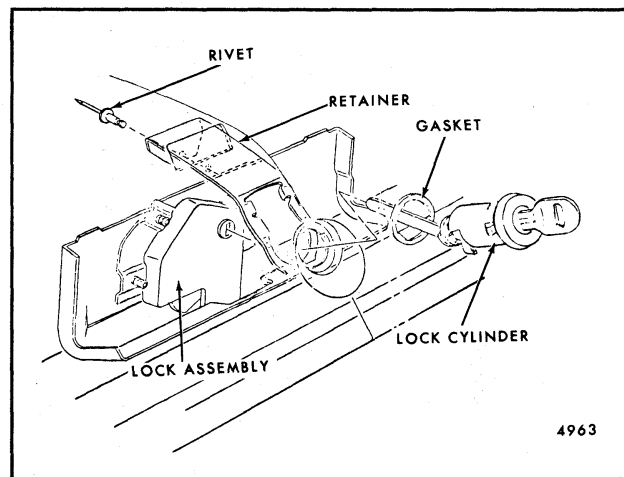


Fig. 7-21-Typical Top Loading Lock Cylinder Retainer - Chevrolet "A" Style Shown

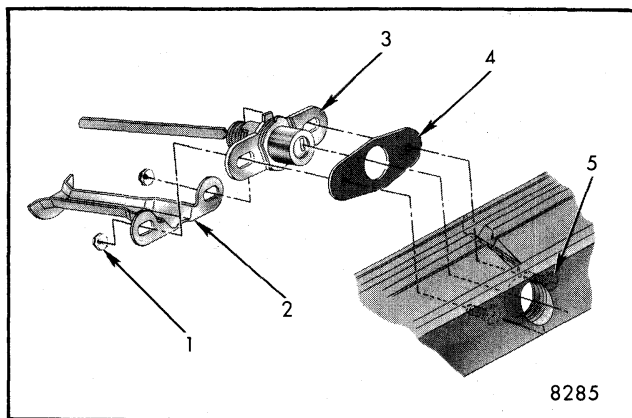


Fig. 7-22-Rear Compartment Lid Lock Cylinder - Chevrolet "F" Styles

- | | |
|----------------------------|-------------------|
| 1. Attaching Nuts | 3. Lock Cylinder |
| 2. Lock Guard (Anti-theft) | 4. Gasket |
| | 5. Mounting Studs |

REAR COMPARTMENT LID LOCK STRIKER - All Styles Except Cadillac Equipped with Electric Closing Unit

Description

On most styles, rear compartment lid lock strikers

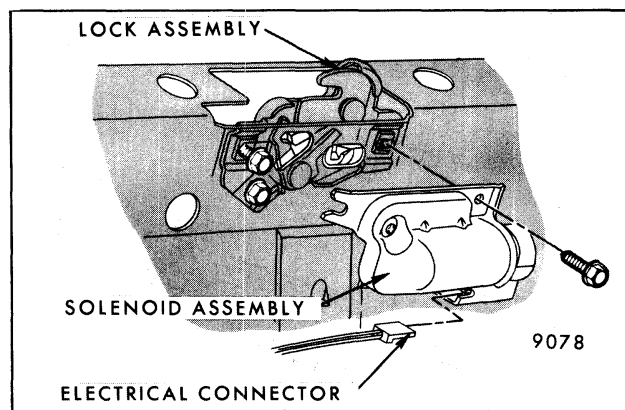


Fig. 7-24-Optional Electric Lid Release Solenoid Installation - All Styles Except Cadillac

are adjustable vertically regardless of location. On a few styles, the striker is welded to a reinforcement and is therefore not adjustable.

Adjustments

To determine if striker adjustment is required, refer to Rear Compartment Lid Lock - Adjustments.

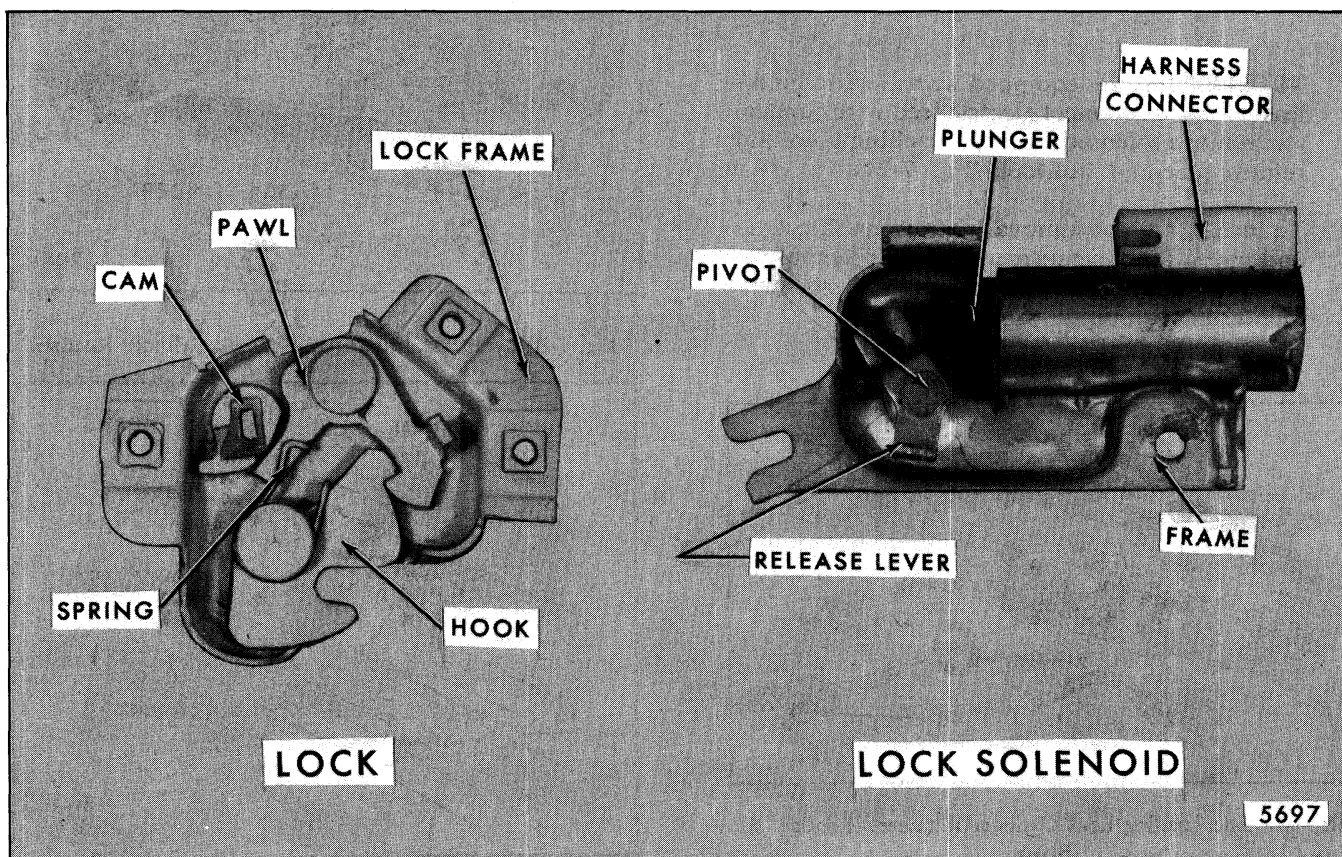


Fig. 7-23-Typical Rear Compartment Lid Lock and Solenoid

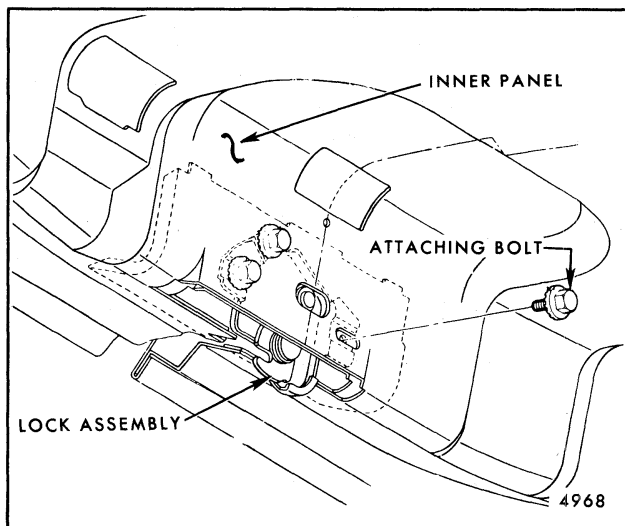


Fig. 7-25-Typical Rear Compartment Lock Mounted in Lid

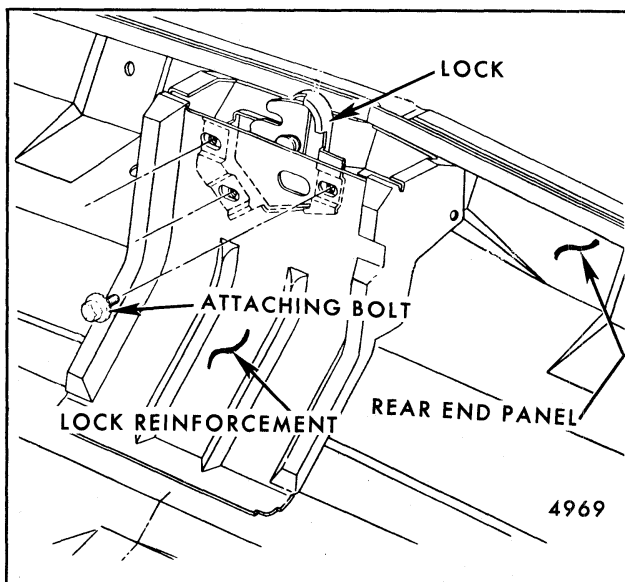


Fig. 7-26-Typical Rear Compartment Lock Mounted in Rear End Panel

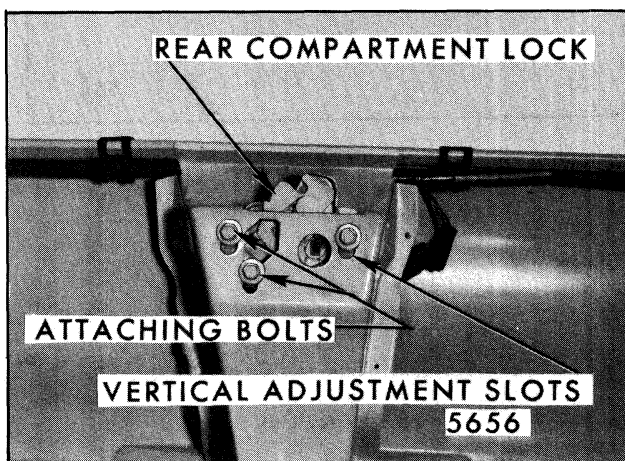


Fig. 7-27-Rear Compartment Lock - "H-11, 77" Styles

Removal and Installation

1. Open rear compartment lid. Mark vertical position of striker by scribing a line at top of striker support or at base of lid or rear end panel.
2. Remove striker attaching screws and remove striker (Figs. 7-28 and 7-29).
3. To install, reverse removal procedure. Close lid and check lock-to-striker engagement. Make any necessary adjustments.

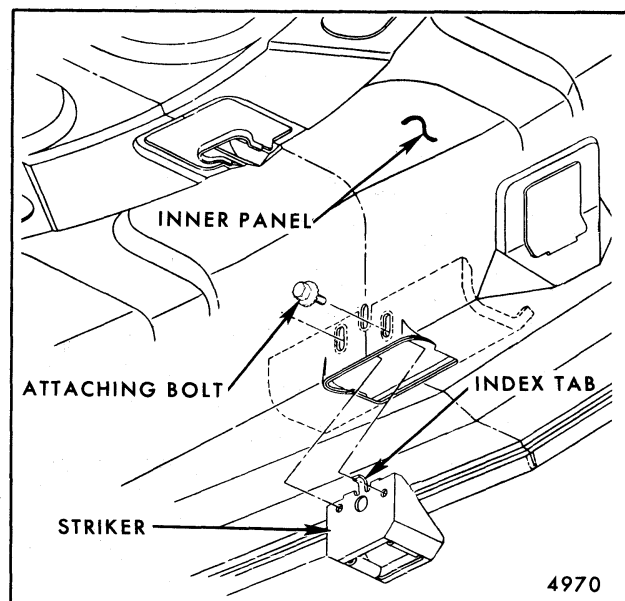


Fig. 7-28-Typical Rear Compartment Lock Striker Mounted in Lid

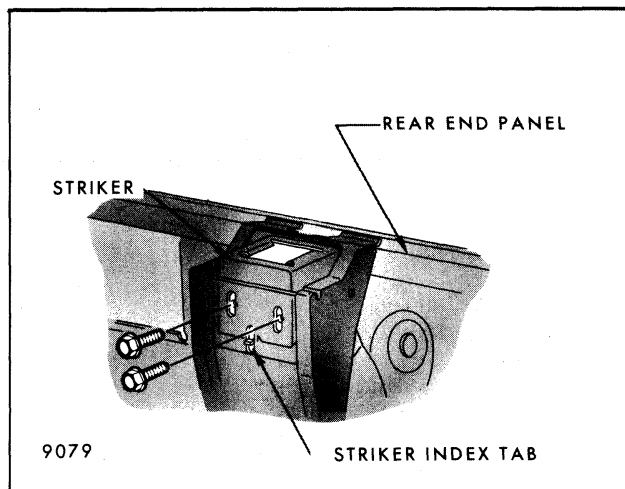


Fig. 7-29-Typical Rear Compartment Lock Striker Mounted in Rear End Panel

REAR COMPARTMENT LID ELECTRIC CLOSING AND RELEASE UNIT - Cadillac Styles

Description

The rear compartment lid electric closing and release unit is a self-contained assembly which is bolted to the rear end panel reinforcement. It is used in conjunction with a mechanical actuator bolted to the lid lock. The unit consists of a die cast housing, electrical

cal switches, levers, plungers, springs and gears working in combination to pull the lid downward and achieve a uniform closing action (Fig. 7-30). The distance that the lid travels during the closing cycle is from 1 to 1-1/2 inches.

A small permanent magnet motor which is mounted to the unit, drives a three gear reduction system. The output gear is staked to a cam which operates a link to control the up and down motion of the striker as

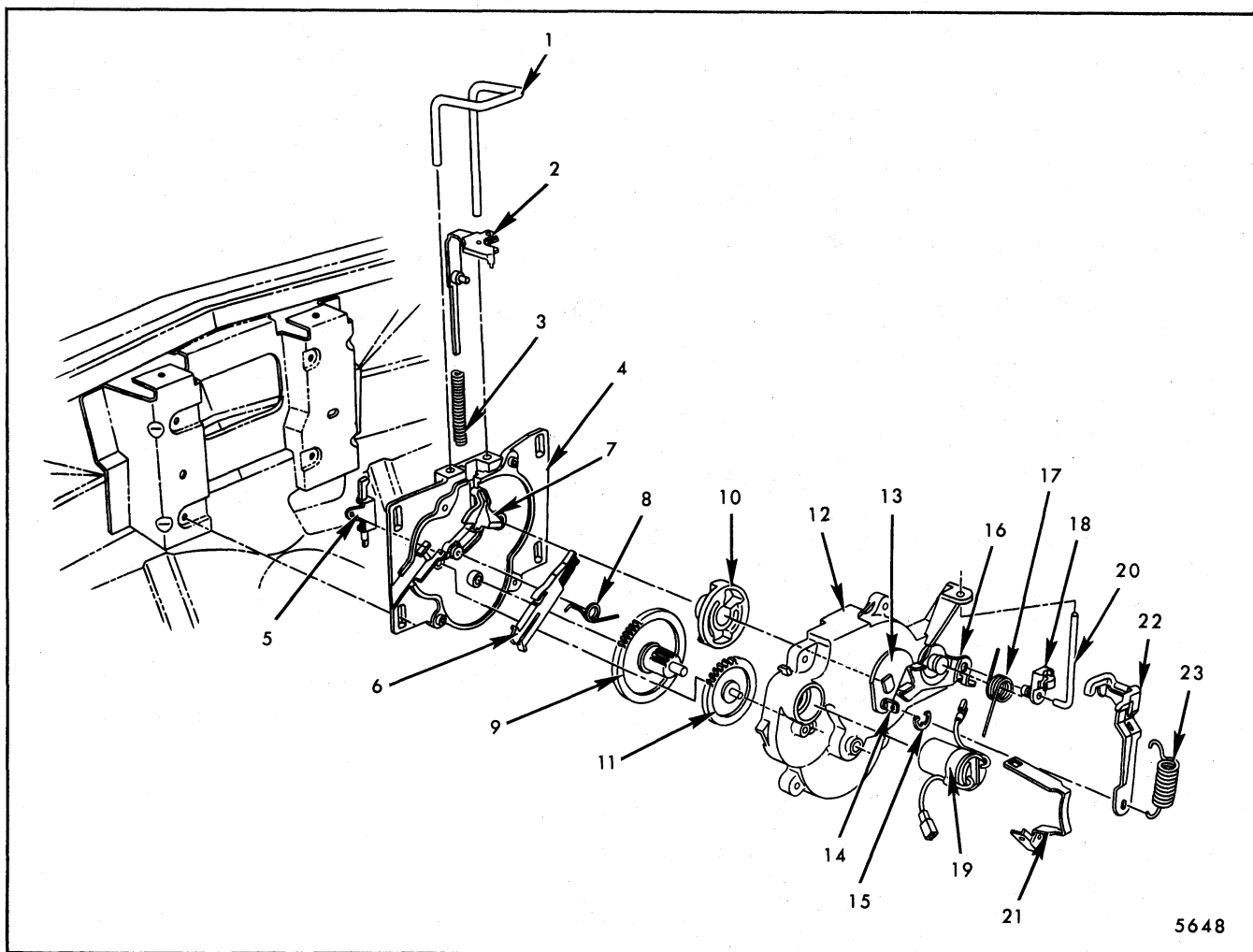


Fig. 7-30-Electric Closing Unit Components - Cadillac Styles

- | | | |
|---|---|-----------------------------|
| 1. Striker | 11. Primary Gear | 17. Return Spring |
| 2. Plunger | 12. Housing | 18. Clip-Lock Release Rod |
| 3. Plunger Spring | 13. Output Cam (Staked to Output Gear and Part of Housing Assembly) | 19. Motor |
| 4. Unit Cover | 14. Output Cam Pivot Pins | 20. Lock Release Rod |
| 5. Lid Ajar Jamb Switch | 15. Retaining Ring | 21. Motor Strap |
| 6. Actuator Switch | 16. Lock Release Lever (Incorporates Anti-Reversing Stop) | 22. Link and Cover Assembly |
| 7. Control Lever - Actuator Switch | | 23. Heavy Link Spring |
| 8. Control Lever Spring | | |
| 9. Secondary Gear (with Slotted Output Shaft) | | |
| 10. Rotor - Output Gear | | |

well as trigger the lock release rod when lid opening is required.

The unit incorporates an anti-reversing feature which prevents the striker from raising if forcible entry into the rear compartment is attempted.

OPENING CYCLE

The lid may be opened in the conventional manner by using the key or by depressing the lid release button mounted in the glove box.

When the lid release button is depressed, the motor is energized and the lid moves downward slightly and then upwards. Just as the lid starts upward, the output cam trips the lock release lever which causes the release rod to jut upward and trigger the lock release actuator. With the lid lock unlatched, the lid is raised to the open position by the force of the torque rods. Simultaneously, the plunger contacts the striker (completing the motor ground circuit) and also closes the actuator switch contacts (completing the motor feed circuit). The motor continues to be energized raising the striker to its full upward position at which time the plunger allows the actuator switch contacts to open (stopping feed current to motor) and breaks contact with the striker (opening motor ground circuit) to shut off unit.

If the lid is opened from the lock cylinder, the lid will raise in the normal fashion. As the lock hook clears the unit, the plunger will contact the striker to complete the motor ground while closing the actuator switch contacts which feeds current to the motor. Once energized, the motor will drive the unit striker to its full up position at which time the plunger allows the actuator contacts to open (stops feed current to motor) and breaks contact with the striker (opening motor ground circuit) to shut off the unit.

CLOSING CYCLE

The lid need only be lowered until the lock hook engages with the unit striker (about 1 to 1-1/2 inches from fully closed). This action energizes the unit by depressing the plunger which causes actuator switch contacts to close (feed current to motor) and completing motor ground circuit through the lock and lid assembly. The lid is then pulled to the fully closed position and the motor is de-energized as the plunger reaches its fullest downward travel (allowing actuator switch contacts to open). The ground circuit is maintained through lid lock to plunger contact until the opening cycle begins.

NOTE: Lower surface of lock frame must be clean and paint free to insure proper ground circuit.

Adjustments

Lateral adjustment is provided at the lid lock by means of horizontal slotted holes in the lid inner panel. Vertical adjustment can be accomplished through slotted holes in unit cover (Fig. 7-31). Lid must be properly aligned in opening through hinge adjustment prior to performing lock or unit adjustment.

1. Disconnect motor feed wire connector.
2. Insert flat-bladed screwdriver into slotted secondary gear output shaft to manually cycle unit (counterclockwise - direction of arrow) to full down (closed) position. Set output cam against lock release lever (anti-reversing stop) as shown in Figure 7-32.
3. Loosen three bolts on unit cover and adjust striker (unit assembly) for proper weatherstrip compression and lid fit to adjacent panels.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

4. Connect motor feed wire.

NOTE: When feed wire connection is completed and plunger is in contact with striker, unit will cycle to full up position.

The unit is designed to compensate for slight over-adjustment (unit set too low). The link and cover assembly incorporates a slotted hole which will allow the output shaft to continue to rotate after lid has reached its maximum downward travel. This will permit the motor to shutoff while maintaining sufficient lid to weatherstrip compression by use of the heavy link and cover assembly spring.

Removal and Installation - Complete Unit

1. Open lid and remove closing unit trim cover.
2. Disconnect motor feed connector.
3. Disconnect actuator switch connector.
4. Scribe locations of unit on rear end panel support and remove three attaching bolts.
5. From rearward side of unit, disconnect lid ajar jamb switch connector. Remove unit from body.

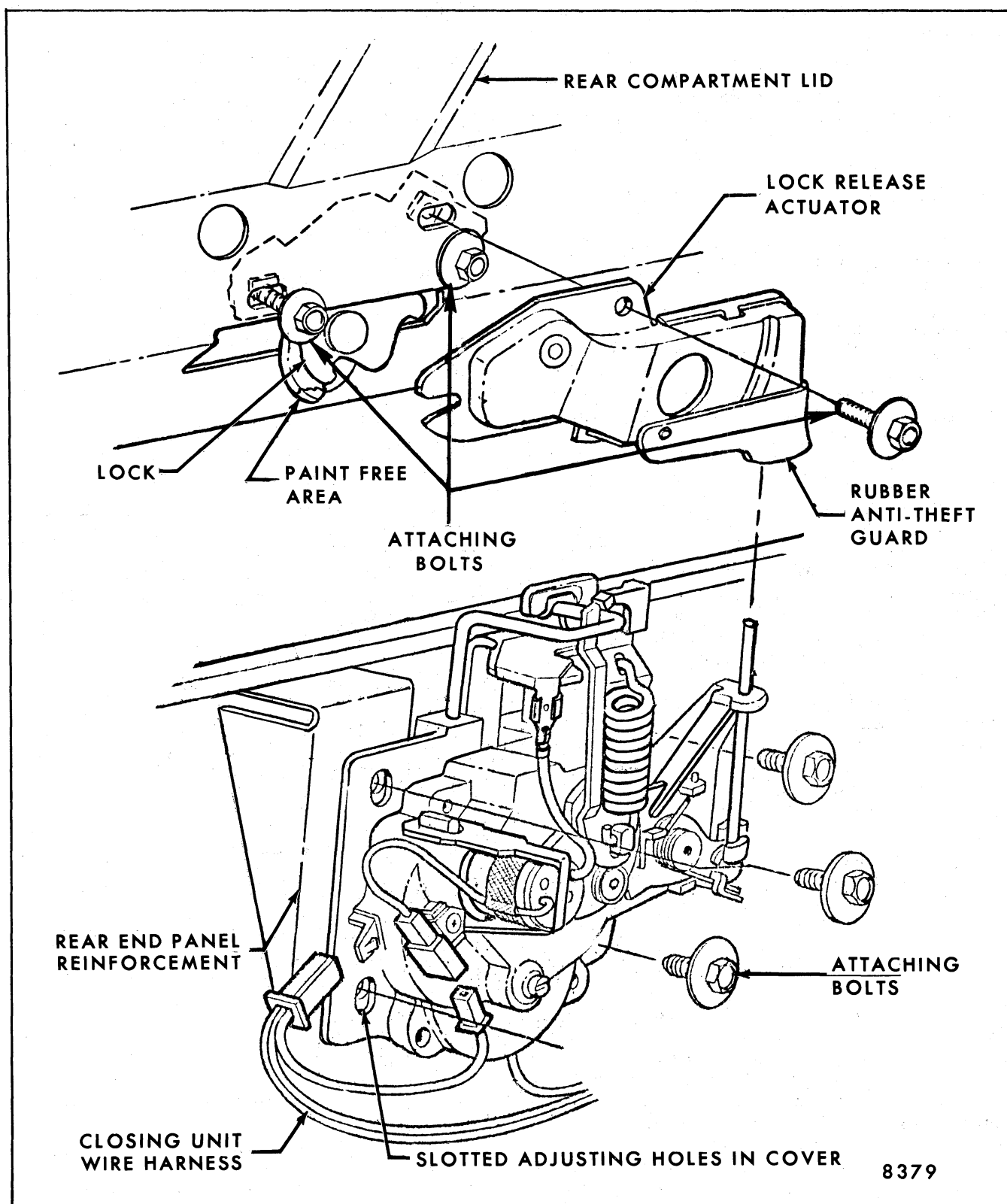


Fig. 7-31-Electric Closing and Release Unit Mounting - Cadillac Styles

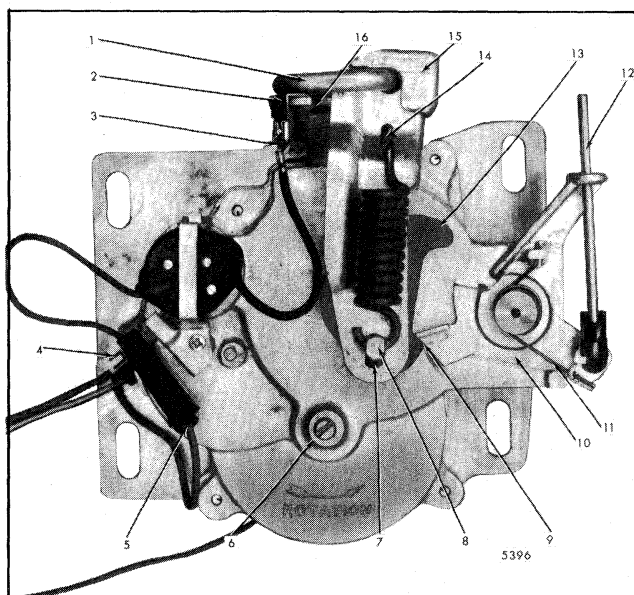


Fig. 7-32-Electric Closing Unit Front View

- | | |
|--------------------------------------|--------------------------------------|
| 1. Striker | 8. Output Cam Pivot Pin |
| 2. Grounding Plate (Part of Plunger) | 9. Anti-Reversing Stop |
| 3. Motor Ground Wire Terminal | 10. Lock Release Lever |
| 4. Actuator Switch and Connector | 11. Lock Release Lever Return Spring |
| 5. Motor Feed Connector | 12. Lock Release Rod |
| 6. Secondary Gear Output Shaft | 13. Output Cam |
| 7. Slotted Hole | 14. Spring Slot |
| | 15. Link and Cover Assembly |
| | 16. Plunger |

6. To install, reverse removal procedure.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

ELECTRIC CLOSING AND RELEASE UNIT DRIVE MOTOR

The motor used to drive the closing and release unit is a permanent magnet type. It has the advantage of compact size and low operating current (2-3 amps). An internal circuit breaker protects the motor if a stall condition is encountered. Operating current is supplied through either the glove box mounted re-

lease switch or the actuator switch contained in the unit. The motor ground circuit is completed through the unit plunger grounding plate and striker or grounding plate and lid lock assembly. The grounding plate is insulated from the plunger by a layer of mylar and secured to the plunger by nylon rivets.

Removal and Installation

1. Open lid and remove closing unit trim cover.
2. Disconnect motor feed connector.
3. Disconnect motor ground terminal from plunger grounding plate tab (Fig. 7-32).

NOTE: Depress terminal locking barb with pointed instrument to remove.

4. Remove motor retaining strap screw and rotate strap upward and remove motor.
5. To install, reverse removal procedure.

NOTE: Refer to Cover and Housing Assembly - Alignment Procedure - to insure proper motor operation.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

ELECTRIC CLOSING AND RELEASE UNIT ACTUATOR SWITCH

The actuator switch is a double-bladed switch incorporating one set of normally open contacts. It is triggered by the actuator switch control lever which senses movement of the plunger and/or output gear rotor (Fig. 7-33). The function of the switch is to maintain current flow to the motor while the contacts are closed. End treatment of the actuator switch matches the contour of the housing assembly insuring proper installation.

Removal and Installation

1. Remove closing and release unit assembly as previously described.

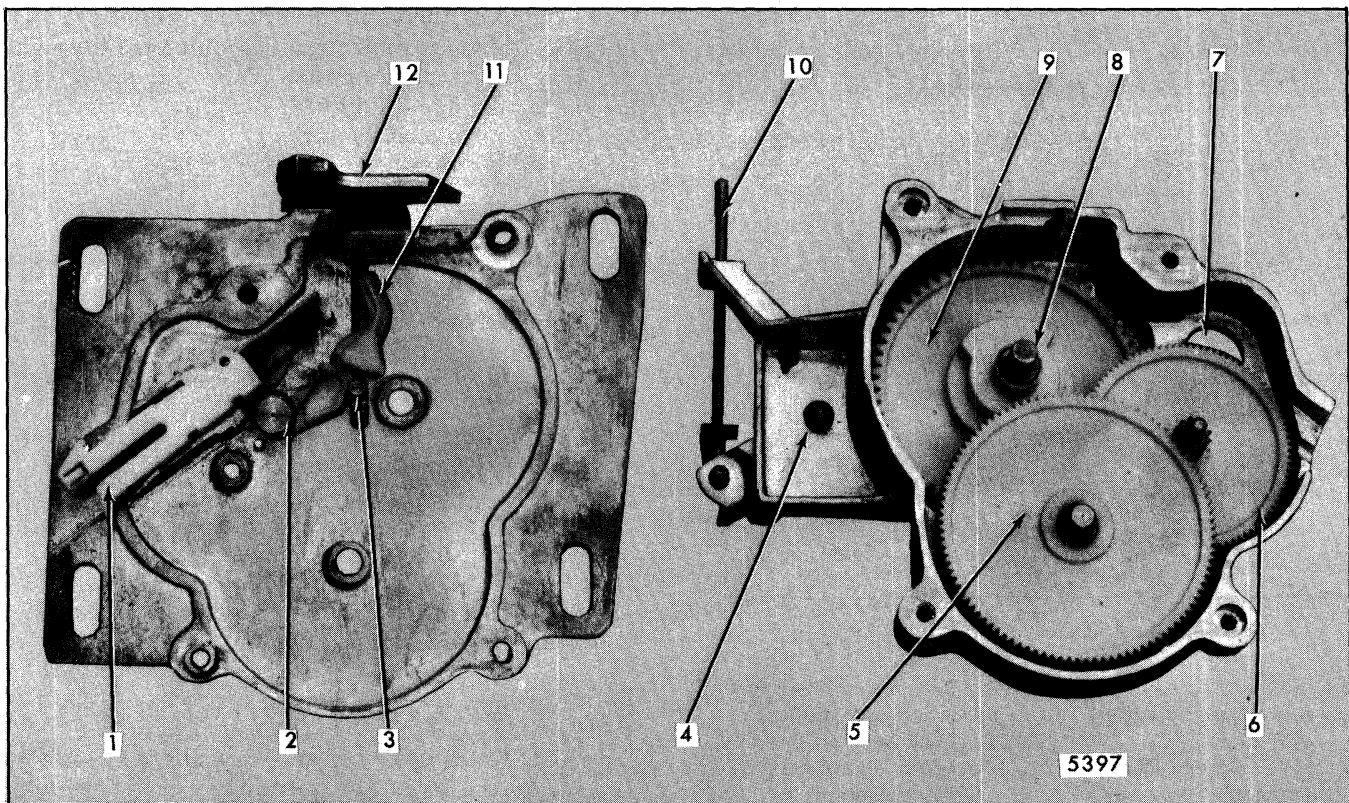


Fig. 7-33-Closing Unit - Housing Separated from Cover

- | | | | |
|-------------------------|------------------------|--|---|
| 1. Actuator Switch | 5. Secondary Gear | 9. Output Gear (Staked to Output Cam Part of Housing Assembly) | 11. Actuator Switch Control Lever (Riveted to Cover Assembly) |
| 2. Control Lever Spring | 6. Primary Gear | 10. Lock Release Rod | 12. Plunger |
| 3. Plunger Stud | 7. Motor Mounting Hole | | |
| 4. Solid Rivet | 8. Output Gear Rotor | | |

2. Remove actuator switch retaining screw from rearward side of unit cover (Fig. 7-34).
3. Slide switch from housing.
4. To install, reverse removal procedure.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

ELECTRIC CLOSING AND RELEASE UNIT-LID AJAR JAMB SWITCH

The lid ajar jamb switch is a spring loaded, normally

closed grounding switch. It is actuated by the short leg of the striker and senses the vertical movement of the striker (Fig. 7-30).

Removal and Installation

1. Remove closing and release unit assembly as previously described.
2. Remove lid ajar jamb switch wire terminal.

NOTE: To remove, depress terminal locking barb with pointed instrument (Fig. 7-34).

3. Remove jamb switch retaining screw and jamb switch assembly.
4. To install, reverse removal procedure.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

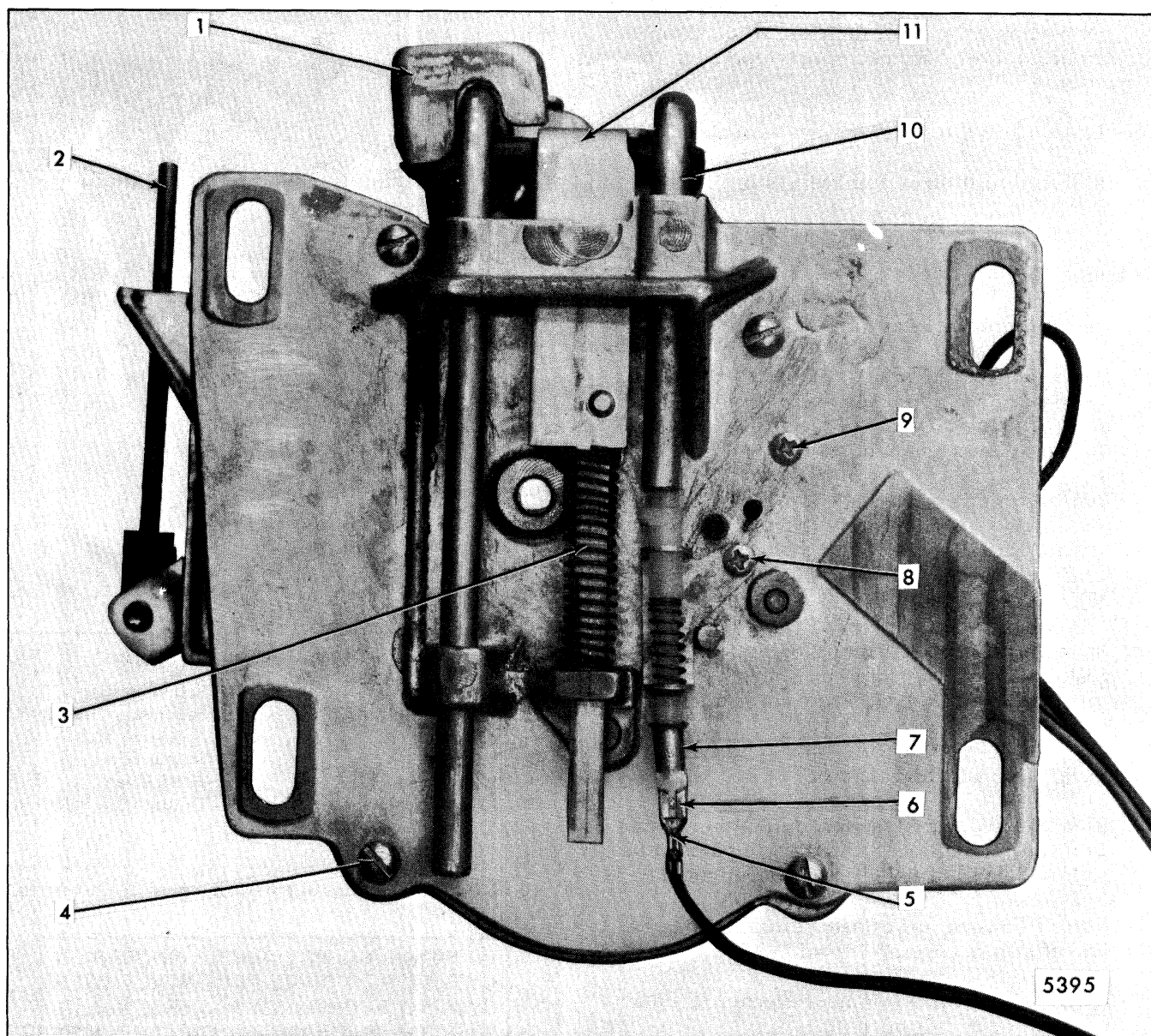


Fig. 7-34-Closing Unit Rear View

- | | | | | |
|-----------------------|---------------------|-------------------------|-------------------------|--------------------|
| 1. Link and Cover | 4. Cover to Housing | 5. Lid Ajar Jamb Switch | 7. Lid Ajar Jamb Switch | 9. Actuator Switch |
| 2. Lock Release Rod | Screws (Four | Wire Terminal | Jamb Switch | Retaining Screw |
| 3. Plunger and Spring | Locations) | 6. Terminal Locking Tab | 8. Jamb Switch | 10. Striker |
| | | | Retaining Screw | 11. Plunger |

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

ELECTRIC CLOSING AND RELEASE UNIT-COVER AND HOUSING ASSEMBLY

Disassembly

1. Remove closing and release unit as previously described.
2. As a bench operation, disengage heavy spring from upper end of link and cover assembly.
3. While depressing striker slightly, rotate lower end of link and cover assembly from output cam pivot pin.
4. Remove link and cover assembly with striker from cover assembly.
5. Remove four cover attaching screws and separate cover from housing.

NOTE: Spring loaded plunger is retained by upper portion of housing, therefore, allow plunger to release slowly when housing is separated from cover.

6. Replace gears, rotor or springs as required.

NOTE: Lubrication of gear teeth is not required.

Assembly

1. Install gears and rotor into housing.
2. Insert plunger into plunger slot at upper edge of cover assembly. Slip plunger spring onto narrow neck of plunger (Fig. 7-34) and insert narrow neck into lower guide of cover.

NOTE: As plunger is installed into cover, actuator switch control lever must be held against the actuator switch so that plunger stud will be positioned on correct side of control lever (Fig. 7-33).

3. Maintain thumb pressure on plunger in such a position so that control lever is making contact with actuator switch and mate cover to housing assembly.
4. Install four attaching screws.
5. Rotate slotted secondary gear output shaft counterclockwise until output cam pivot pin is at its highest point and hole is aligned horizontally.
6. Thread link and cover assembly onto long leg side of striker (Figs. 7-35 and 7-34).
7. Insert striker into cover assembly striker guide.
8. While lowering striker into striker guides, rotate link and cover assembly as shown in Figure 7-35 until slotted hole in lower end of link slips onto the output cam pivot pin.
9. Retain link on pivot pin with tight looped end of spring (Fig. 7-32).
10. Using a sturdy, pointed instrument (awl), engage loose end of heavy spring into upper spring slot of link.
11. Install motor.
12. Mount and align unit to rear end panel reinforcement.

NOTE: Make certain jamb switch wire terminal is connected.

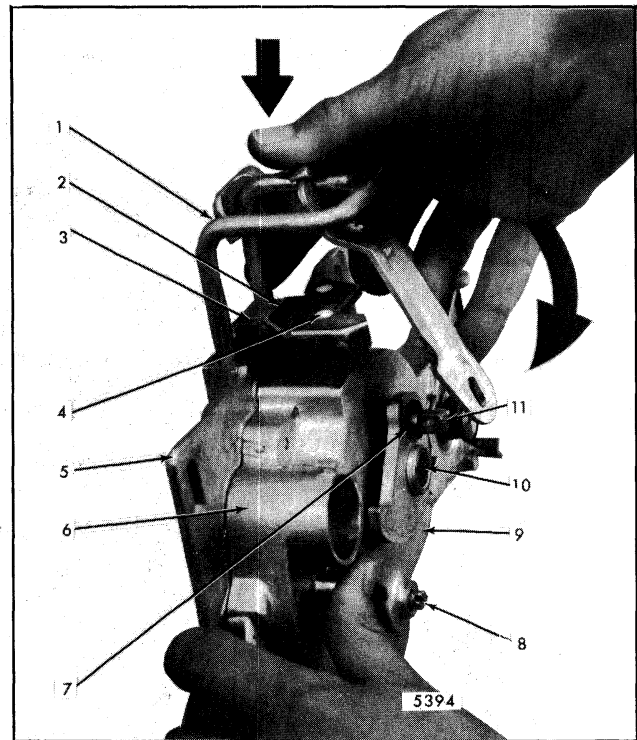


Fig. 7-35-Closing Unit Link Installation

- | | |
|--------------------------------------|--|
| 1. Striker | 7. Retaining Ring |
| 2. Grounding Plate (Part of Plunger) | 8. Secondary Gear Shaft Adjusting Slot |
| 3. Plunger | 9. Output Cam |
| 4. Nylon Rivets | 10. Solid Rivet |
| 5. Cover Assembly | 11. Output Cam Pivot Pin |
| 6. Housing Assembly | |

13. Complete remaining wire harness connections.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

Alignment Procedure

It is necessary to determine if unit is properly aligned to insure that the motor is shut off (not in stall condition) and output cam is against anti-reversing stop.

1. Engine off.
2. Connect amp meter between motor feed connector and motor connector.

3. Hold amp meter outside rear compartment with leads draped over weatherstrip.

4. Close lid and allow unit to complete closing cycle. (Current reading during the closing cycle is approximately 2 to 3 amps).

5. Amp meter will read zero when closing cycle is complete (approximately 3 to 4 seconds).

NOTE: If amp meter does not read zero when lid reaches its full downward travel, the unit is adjusted too low and motor is in stall condition. To correct, align unit upward.

DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Closing unit will complete opening cycle only while glove box switch is depressed - lid opens normally.	<p>A. Loose actuator wire harness connector.</p> <p>B. Broken or cut orange/black wire.</p> <p>C. Defective actuator switch.</p>	<p>A. Reconnect actuator wire harness connector.</p> <p>B. Repair orange/black wire.</p> <p>C. Place jumper wire across actuator connector to test actuator switch. If unit completes cycle, replace actuator switch.</p>
2. Unit will not cycle up (open) when lid is opened with key and will not open from glove box switch - OR Unit will not cycle down (close) when lid is latched onto striker.	<p>A. Improper ground connection.</p> <p>B. No feed current.</p> <p>C. Defective motor.</p> <p>D. Severe bind in unit gear train.</p> <p>E. Stripped gear in gear train - motor whine is heard.</p> <p>F. Plunger grounding plate does not contact striker (opening cycle) or lock frame (closing cycle).</p>	<p>A. Check for loose or broken ground wire - repair or reconnect wire.</p> <p>B. Check orange/black wire with test light. If no light, trace and repair open feed circuit or blown fuse.</p> <p>C. Using screwdriver, depress plunger fully (contacting grounding plate) while touching shank of tool to striker. If spark can not be induced, replace motor.</p> <p>D. Rotate secondary gear output shaft counterclockwise. If bind exists, disassemble unit and repair bind.</p> <p>E. Rotate secondary gear output shaft counterclockwise. If output cam does not rotate, disassemble unit and replace stripped gear.</p> <p>F. Foreign substance on surface of plunger grounding plate or lower surface of lock frame coated with paint or grease. Remove obstruction and/or clean as required.</p>

DIAGNOSIS CHART (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
3. Lid ajar lamp stays "on" with lid closed - unit operates properly.	A. Shorted jamb switch wire. B. Defective lid ajar jamb switch.	A. Check for pinched or bare white/dark green wire. B. Inspect for broken or loose ajar jamb switch.
4. When glove box switch is actuated, unit cycles up then down without releasing lid. Unit functions normally when key is used.	A. Defective lock release actuator. B. Defective lock release rod. C. Defective lock release lever. D. Defective output cam.	A. Inspect and manually trip actuator - replace if defective. B. Inspect for bent, disconnected or missing lock release rod. Replace if required. C. Inspect for broken or bent lock release lever. Replace housing assembly if required. D. Inspect for broken or missing output cam. Replace housing assembly if required.
5. Lid will not latch when closed and unit cycles down then up.	A. Lock release rod stuck in up position. B. Lock release actuator stuck in release position.	A. Inspect for bent lock release rod or broken lock release lever return spring. Replace if required. B. Inspect lock release actuator for binds or bent components. Replace if required.
6. Unit cycles with lid open when striker is depressed.	A. Shorted motor ground wire. B. Defective plunger ground plate.	A. Inspect for pinched motor ground wire or loose ground connector touching housing. Repair or install as required. B. Inspect for damaged plunger ground plate. Replace plunger if required.
7. Lid will not open from glove box switch but operates normally when key is used.	A. Defective glove box switch or broken red wire from switch to motor.	A. Place jumper wire across actuator connector to test glove box switch. Replace switch if defective or repair broken red wire from switch.

REAR COMPARTMENT TORQUE RODS

Description

Torque rods are used to control the amount of effort needed to operate the rear compartment lid and can be adjusted to increase or decrease operating effort, except on the "H-11" style.

Adjustments

1. To increase the amount of effort required to raise the rear compartment lid or to decrease the amount of effort required to close the lid, reposition the end of the rod to a lower torque rod adjusting notch.
2. To decrease the amount of effort required to raise the rear compartment lid or increase the amount of effort required to close the lid, reposition the end of the rod to a higher torque rod adjusting notch.

Removal and Installation

1. For removal and/or adjustment of rear compartment lid torque rods, use tools outlined below:

- a. On "X-27, 69" and "H-27" styles, use tool J-21412-01 or equivalent (Fig. 7-36).

NOTE: Torque rod tool J-21412 (or equivalent) used for past model "X-27, 69" styles can be adapted for use on 1975 and later model "X-27, 69" and "H-27" styles if 1-1/2 inches are removed from the handle. Heat plastic (red) handle cover to remove before cutting. Additional rework of tool as outlined in Figure 7-37 is required before tool can be used on "H-27" styles.

- b. On Chevrolet "B-47" styles, use tool J-23408 or equivalent.

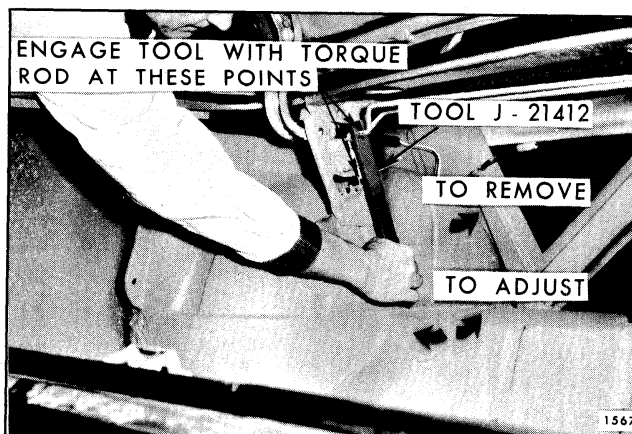


Fig. 7-36-Rear Compartment Torque Rod Adjustment - "X-27, 69" Styles

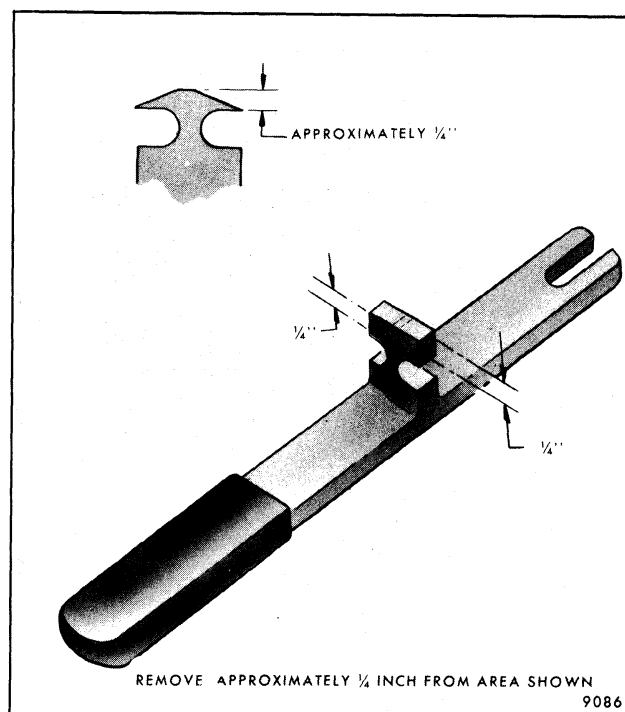


Fig. 7-37-Modified "X" and "H" Torque Rod Tool

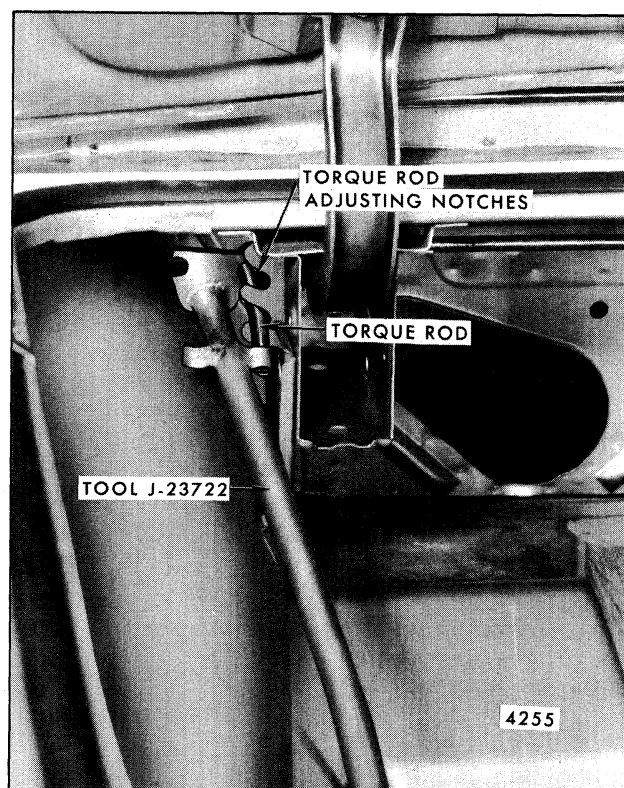


Fig. 7-38-Rear Compartment Torque Rod Adjustment - Cadillac "C-E" and Buick "E" Styles

- c. On Cadillac "C and E" and Buick "E" styles, use tool J-23722 or equivalent (Fig. 7-38).

- d. On Oldsmobile "E" styles, use tool BT-7102 or equivalent (Fig. 7-39).
- e. On "F" styles, use a length of 1/4" inside diameter heavy wall pipe (Fig. 7-40).

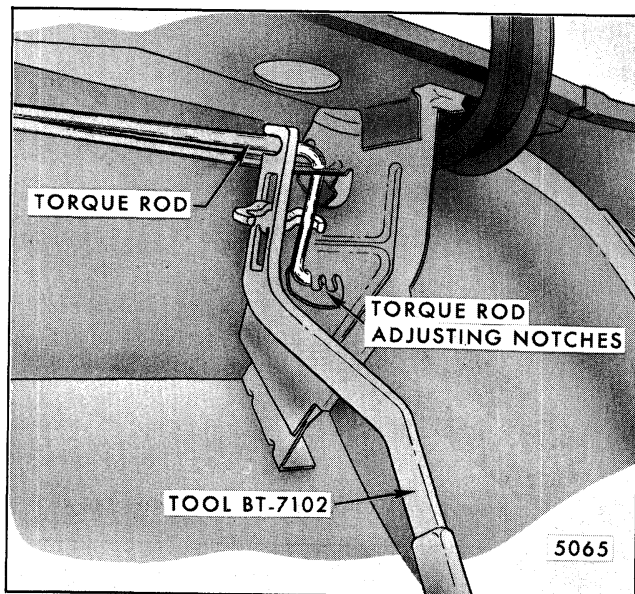


Fig. 7-39-Rear Compartment Torque Rod Adjustment - Oldsmobile "E" Styles

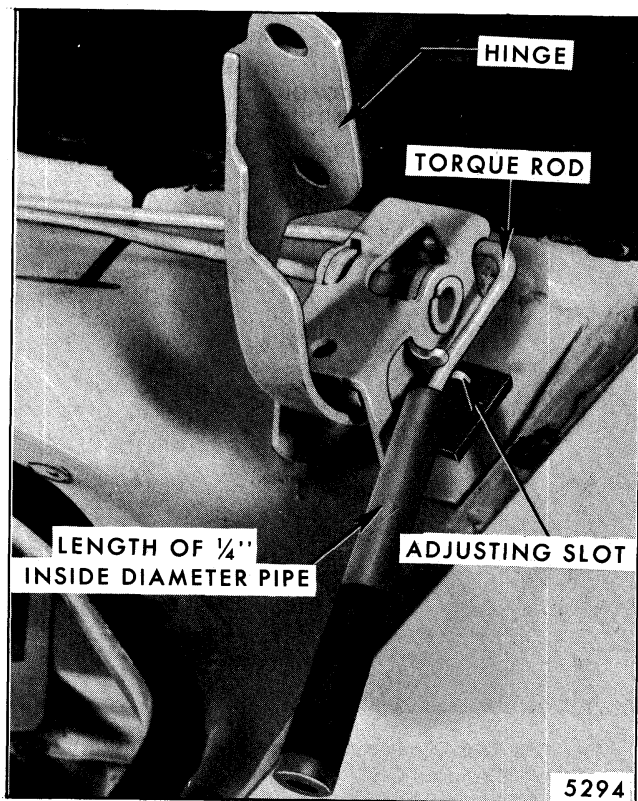


Fig. 7-40-Rear Compartment Torque Rod Adjustment - "F" Styles

- f. On all other "A, B, C" styles, except Cadillac "C" styles, use a length of 1/2" inside diameter heavy wall pipe (refer to Fig. 7-41).

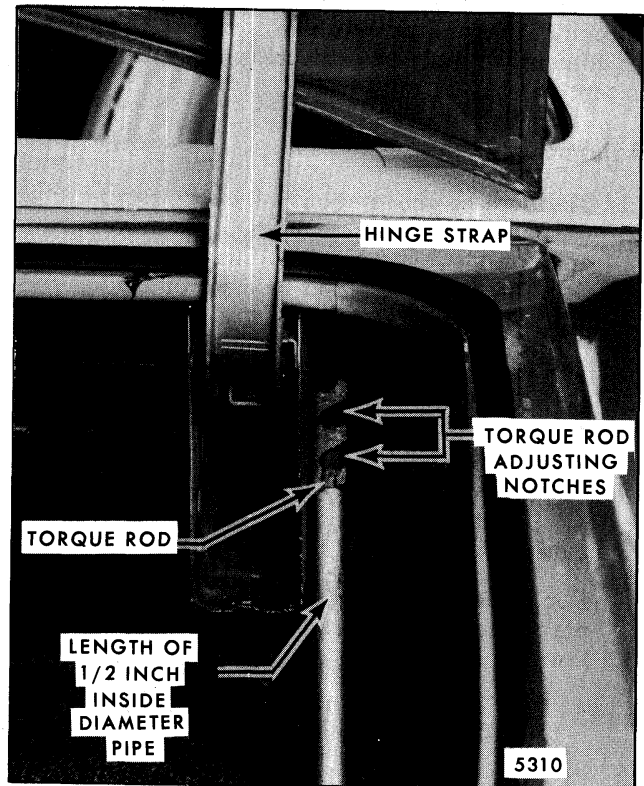


Fig. 7-41-Rear Compartment Torque Rod Adjustment - "A" Styles Shown, "B-C" Style Similar

2. To remove torque rods, prop lid in full open position and disengage end of torque rod from adjusting notches on hinge strap, as shown in Figures 7-36, 7-42 and 7-43. Then allow handle of removal tool to rotate forward to relieve tension on rod. In some cases, it may be necessary to install a pair of locking type pliers on rod, as shown in Figures 7-42 and 7-43, and lift upward on pliers to disengage removal tool from end of rod.
3. Disengage opposite end of torque rod from hinge strap and remove rod from body.
4. To install, reverse removal procedure.

REAR COMPARTMENT WEATHERSTRIP - All Except "H-07, 27" and All "X" Styles

Removal and Installation

1. Separate "butt" ends of weatherstrip at bottom rear of opening (Fig. 7-44).

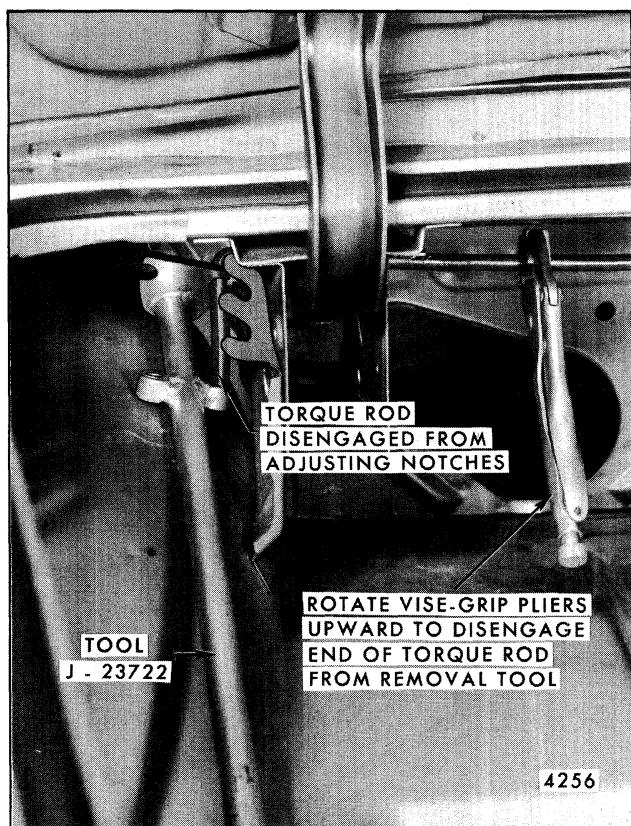


Fig. 7-42-Rear Compartment Torque Rod Removal - Cadillac "C-E" and Buick "E" Styles

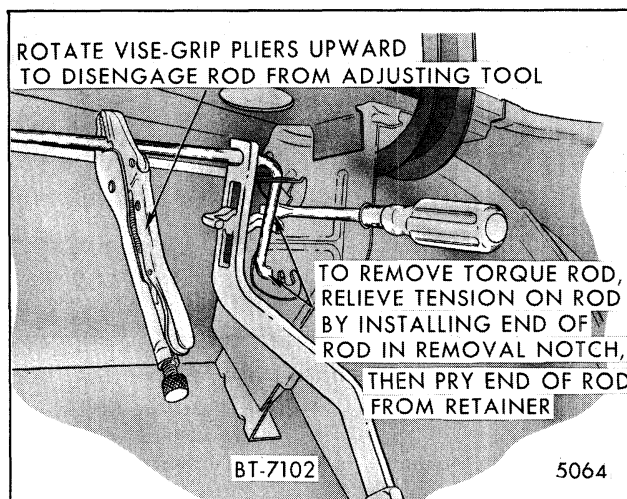


Fig. 7-43-Rear Compartment Torque Rod Removal - Oldsmobile "E" Styles

2. Using flat-bladed tool, such as sharp bladed putty knife, carefully cut cemented bond of weatherstrip from outer surface of gutter (Fig. 7-44). Then with a narrower sharp tool, such as a wood chisel, cut cemented bond of weatherstrip from

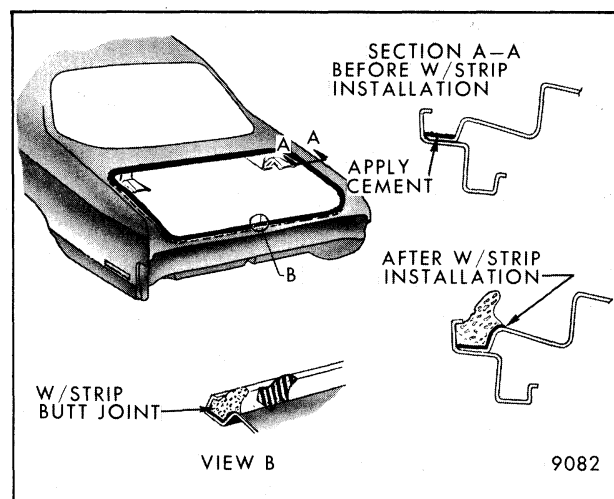


Fig. 7-44-Rear Compartment Weatherstrip - All Styles Except All "X" and "H-07, 27"

- bottom of gutter around opening and remove weatherstrip.
- NOTE:** Kent Products "Special Release Agent" or equivalent may be used to loosen and/or dissolve weatherstrip cement.
3. To install, clean out gutter around opening to provide clean cementing surface.
4. Apply generous bead of black weatherstrip cement to bottom surface of gutter around opening. With suitable brush, gently level applied cement.
5. Starting at rear center of opening with one end of weatherstrip, insert weatherstrip into gutter while cement is still wet. Use flat-bladed tool to aid installing weatherstrip. Avoid stretching weatherstrip during installation.
6. If weatherstrip is new, cut end to form butt joint at rear center of opening. Apply cement to both ends of weatherstrip to form a neat joint. Secure weatherstrip uniformly in gutter.
7. Using a pressure type applicator, apply weatherstrip cement (neoprene type) between weatherstrip and outer surface of gutter completely around opening to assure a watertight seal (Fig. 7- 44).
8. Roll or press weatherstrip to aid in obtaining good cement bond. Allow sufficient time for cement to set before closing rear compartment lid.

REAR COMPARTMENT WEATHERSTRIP - All "X" and "H-07, 27" Styles

Description (Refer to Figures 7-45, 7-46, 7-47)

A supersoft foam clinch type weatherstrip is used on all "X" and "H-27" styles (Fig. 7-45 View A and Fig. 7-46), while the "H-07" styles use a bulbular clinch type weatherstrip (Fig. 7-45 View B). Both types,

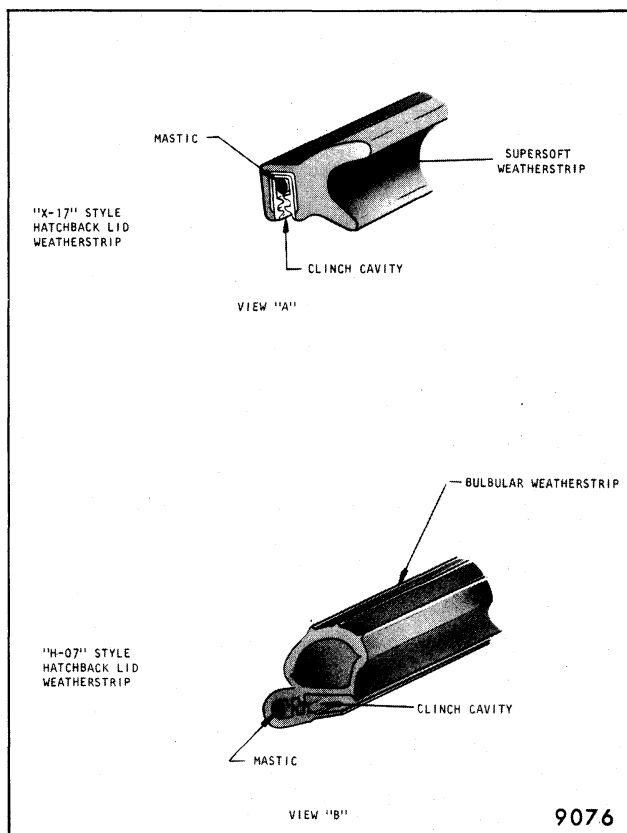


Fig. 7-45-"H-07" and "X-17" Weatherstrip

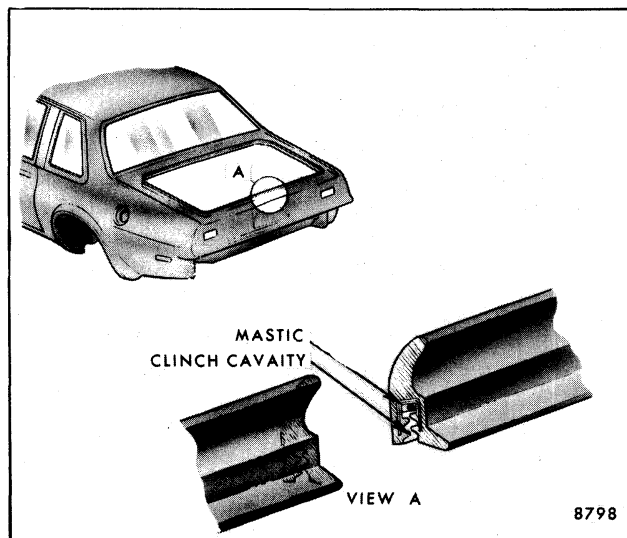


Fig. 7-46-"H-27" Weatherstrip

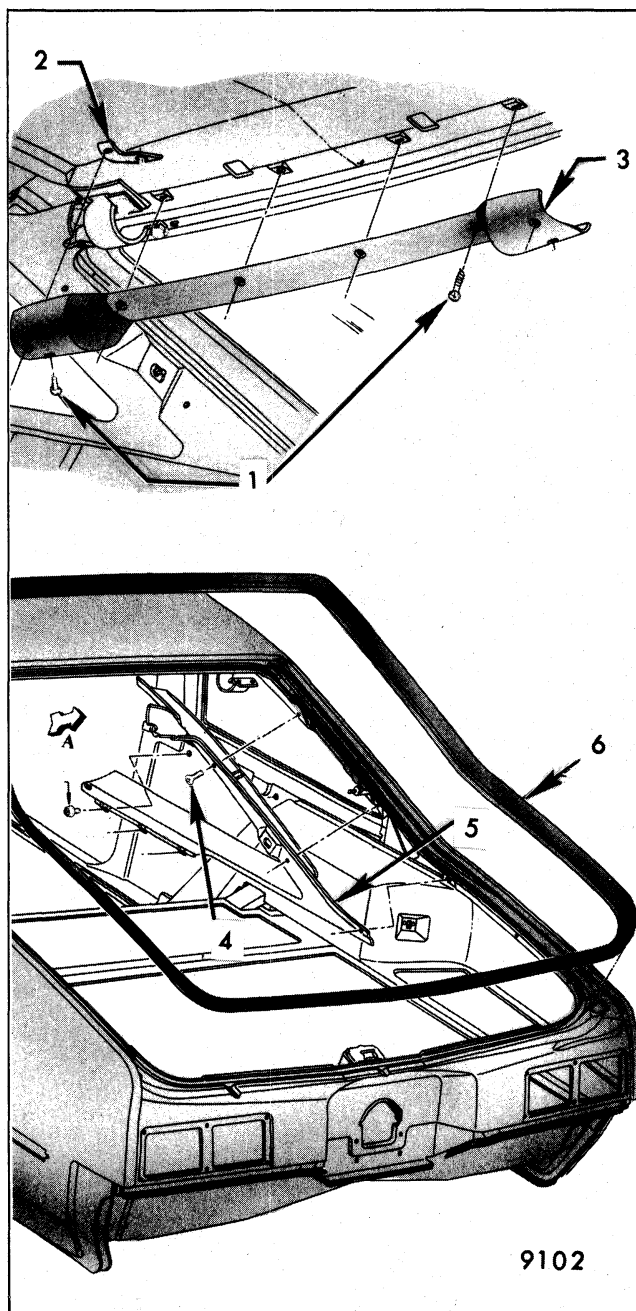


Fig. 7-47-"X-17" Weatherstrip and Trim Removal

- | | |
|--------------------|-------------------------|
| 1. Screw | 4. Trim Retaining Screw |
| 2. Retainer | 5. Quarter Window Trim |
| 3. Garnish Molding | 6. Weatherstrip |

supersoft foam and the bulbular, incorporate integral metal reinforced sections and a mastic material in the clinch cavity which grips and seals the weatherstrip to the gutter flange.

Removal and Installation

1. Separate butt joint at base of opening (on "H-07" styles remove and retain plug from old weatherstrip).

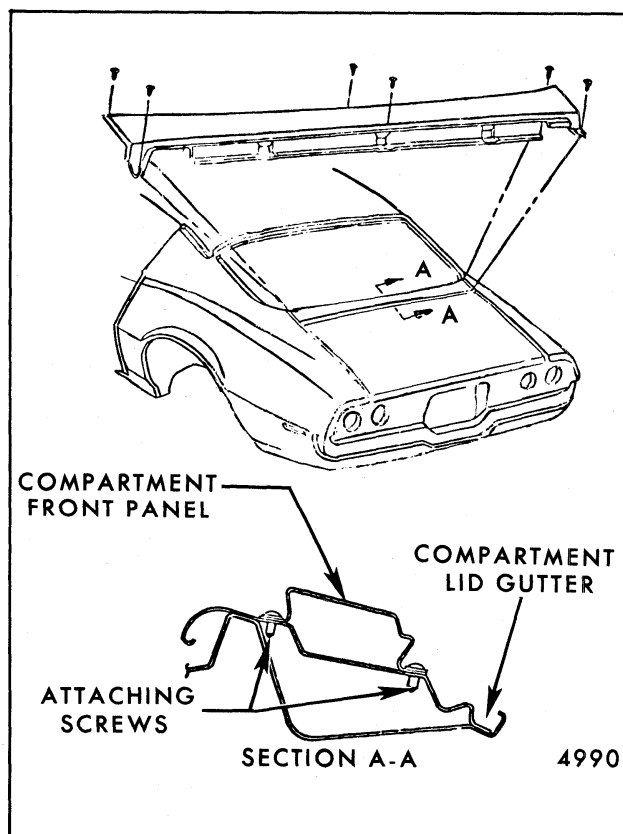


Fig. 7-48-Rear Compartment Front Panel - "F" Styles

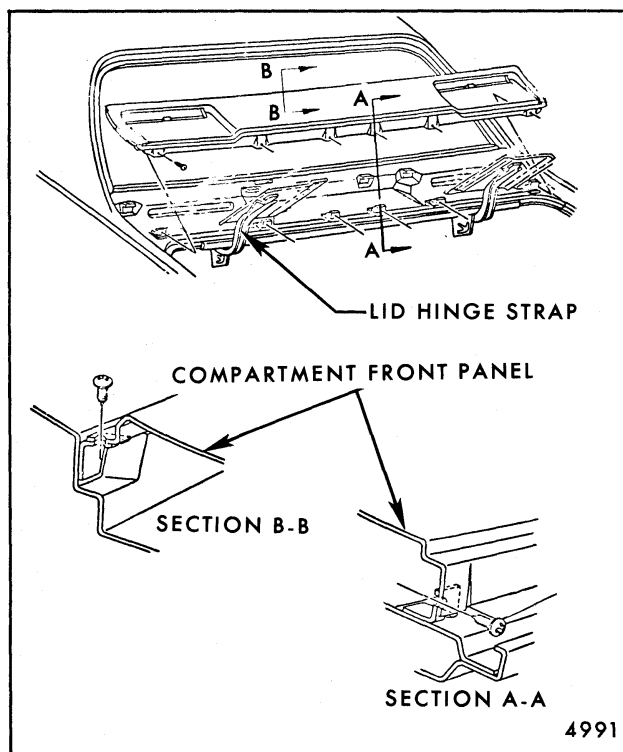


Fig. 7-49-Rear Compartment Front Panel - Oldsmobile "E" Style

2. Peel weatherstrip from gutter flange toward lower corners and then around complete opening.
3. To install, begin inserting center of weatherstrip (marked with paint onto the gutter flange at the forward center of the of the opening between hinges. Be sure clinch is completely seated to the flange around the entire opening.
4. On "H-07" styles insert plug from old weatherstrip into new weatherstrip to maintain shape at butt end.
5. Cement butt ends together.

REAR COMPARTMENT FRONT PANEL - "F" Styles, "X-69" Styles Oldsmobile and Buick "E" Styles

Removal and Installation

1. With rear compartment lid raised, remove screws from lower edge of panel as shown in Figure 7-48 - "F" styles, Figure 7-49 - Oldsmobile "E" style, Figure 7-50 - Buick "E" style and Figure 7- 51 - "X-69" styles.
2. Remove back window lower reveal molding - "F" styles (See "Stationary Glass" Section).

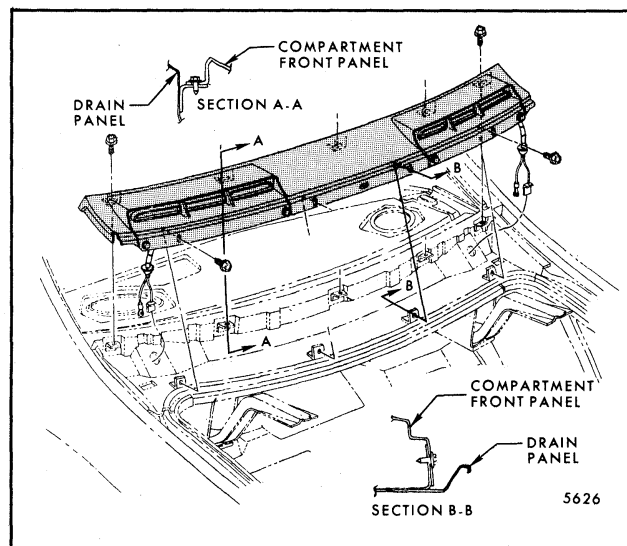


Fig. 7-50-Rear Compartment Front Panel - Buick "E" Style

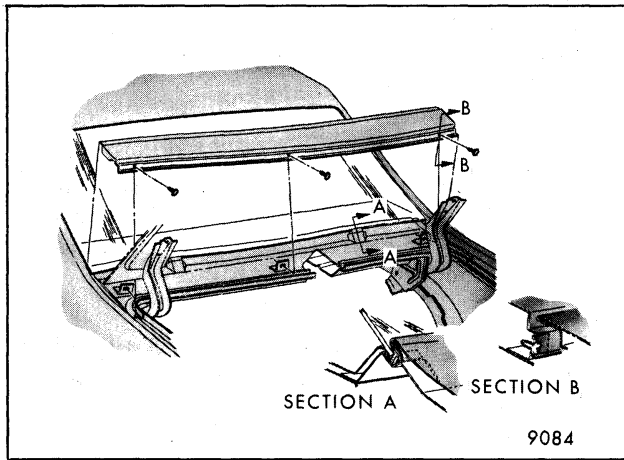


Fig. 7-51-Rear Compartment Front Panel - "X-69" Style

3. Remove screws from upper edge of panel and remove panel on "F- 87" and Buick "E-87" styles.

NOTE: In some cases it may be necessary to cut away a small amount of adhesive material used to seal back glass in order to locate and remove screws. Care should be exercised so as not to break adhesive bond to rear glass.

4. To install, reverse removal procedure.

BACK WINDOW DEFOGGER (BLOWER TYPE)

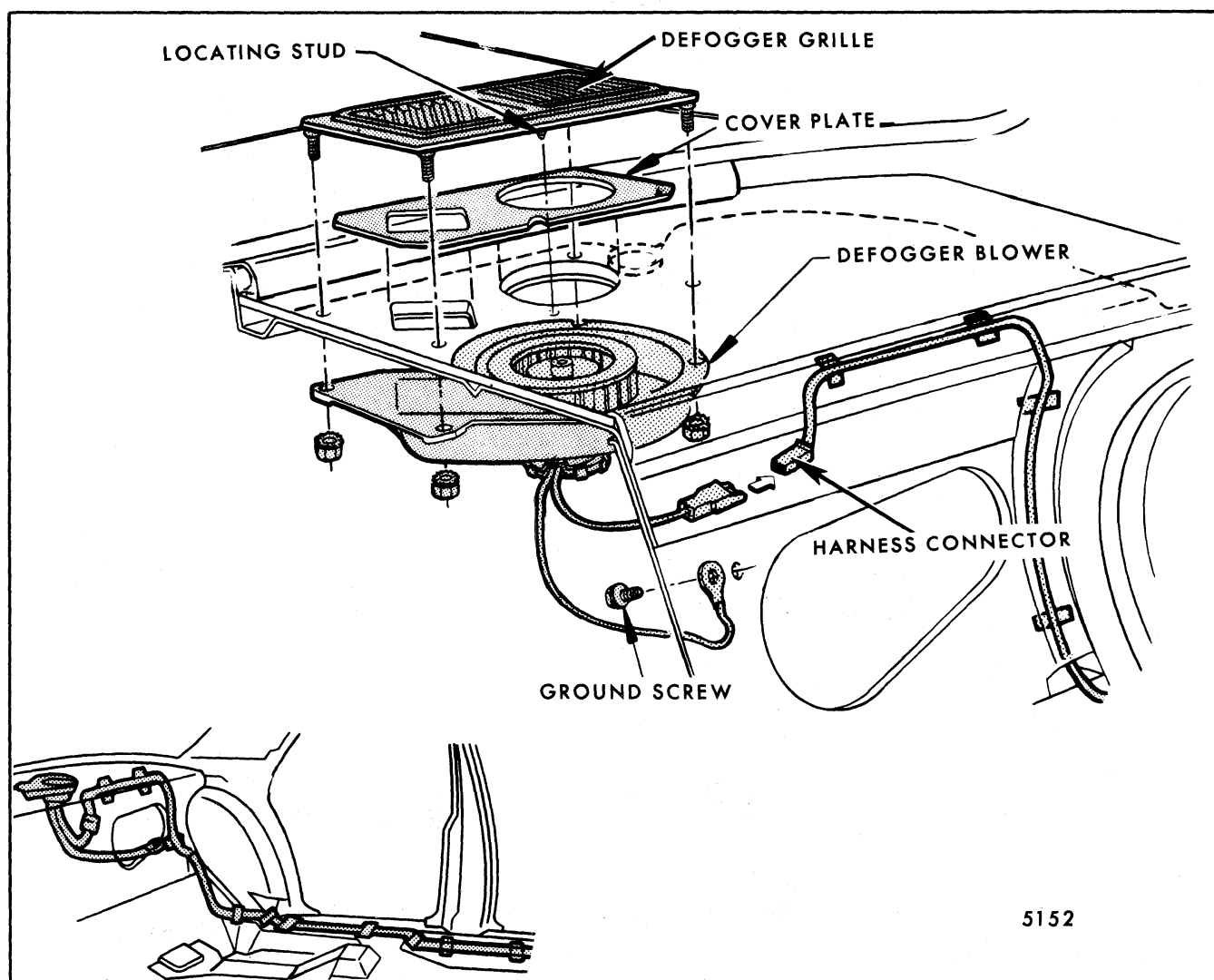


Fig. 7-52-Typical Defogger Blower Installation - "B" Style Shown - Other Styles Similar

DESCRIPTION

Defogger blower motors that are mounted to either the rear seat back panel or rear seat back to back window panel are illustrated in this section. Refer to the Electrical Section for diagnostic procedure and electrical characteristics.

The blower motors can be removed from inside the rear compartment without trim removal, except on Chevrolet "B-47" and Buick "E-87" styles which require rear seat back removal for blower attaching bolt access. Refer to Figures 7-52, 7-53, 7-54 and 7-55 for typical defogger blower installations.

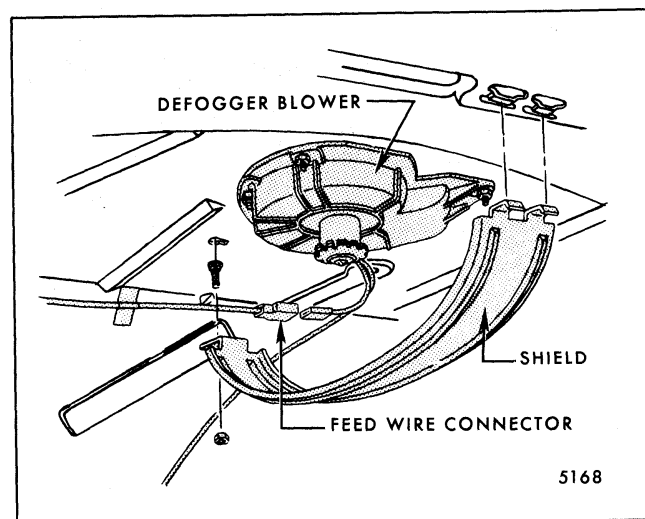


Fig. 7-53-Back Window Defogger Blower Shield - "A" Styles

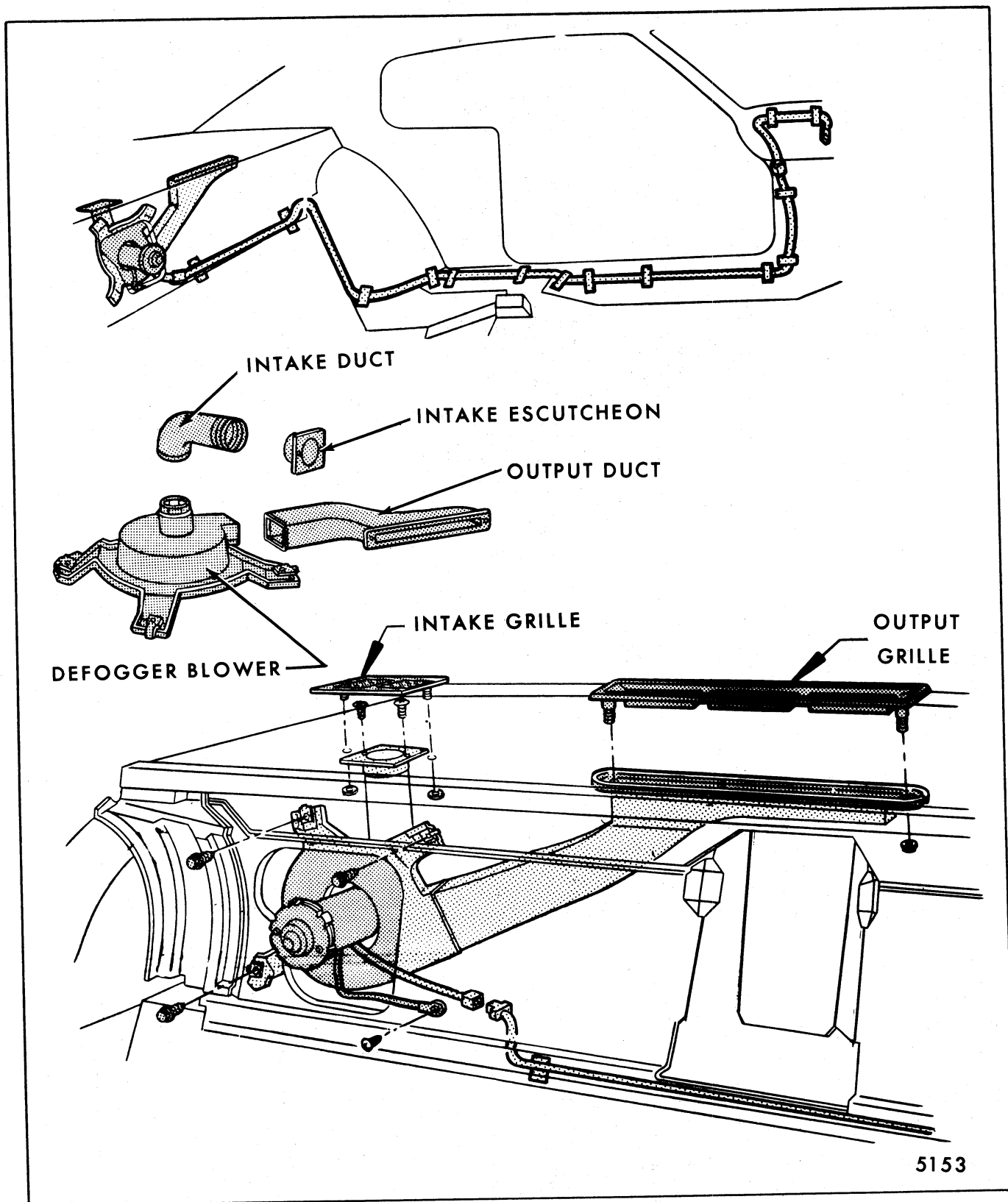


Fig. 7-54-Defogger Blower Installation - Chevrolet "B-47" Style

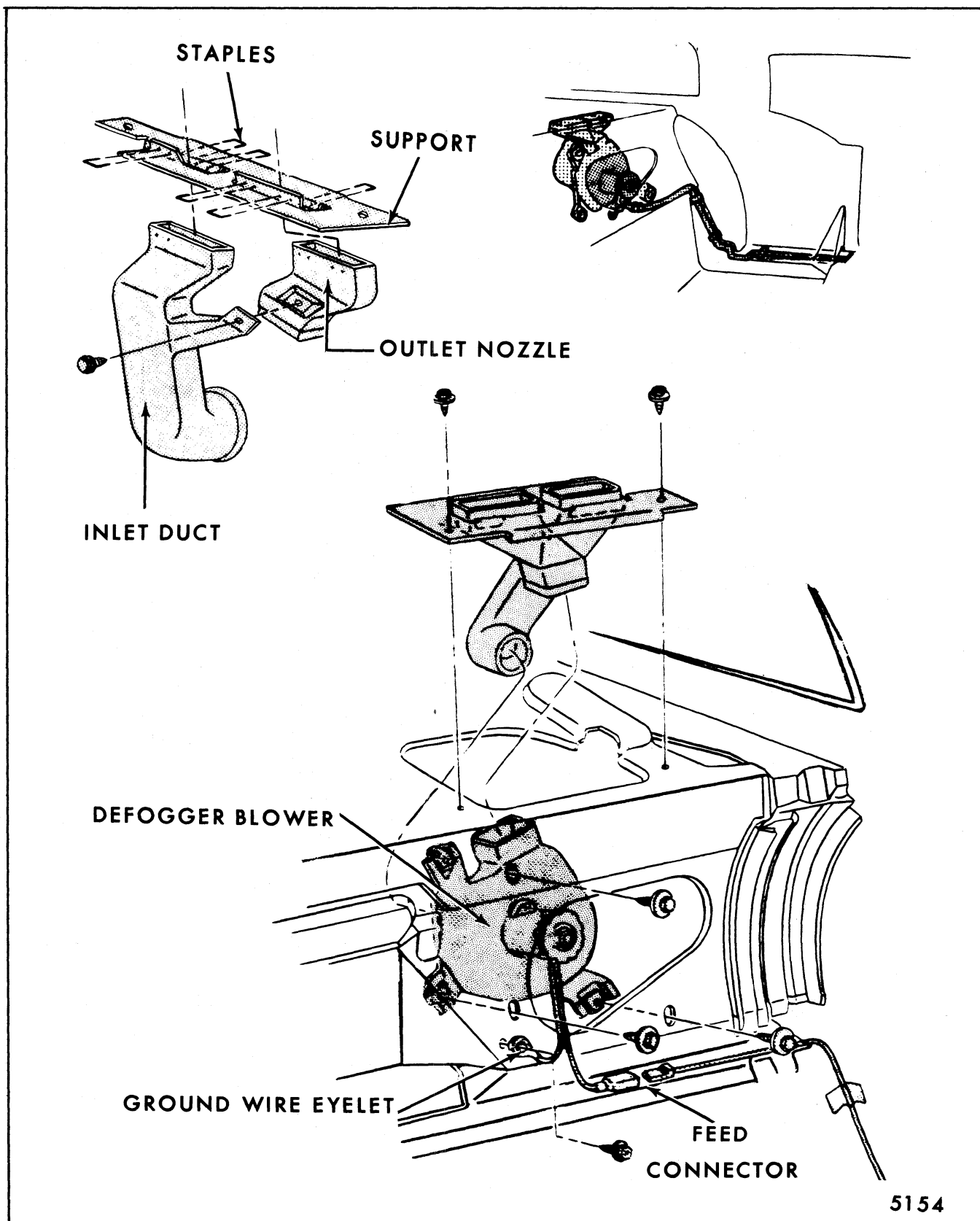


Fig. 7-55-Defogger Blower Installation - Buick "E-87" Style

FIBER OPTIC MONITOR SYSTEM - CADILLAC AND BUICK "C-E" STYLES

Description

The optional fiber optic system monitors tail, stop and directional lamp illumination from the passenger compartment.

Basically, the fiber optic conductor which is approximately 1/16 inch in diameter, consists of a bundle of transparent acrylic strands covered with an opaque

black vinyl coating. Light is reflected along each strand within the bundle and is unaffected by the curves encountered during conductor routing. The ends of each bundle are cleanly cut and polished for maximum light transfer.

The conductor is routed along the rear quarter from the tail lamps to the monitor. The monitor is installed on the roof near the back window opening on all styles except Cadillac "E-67" style which is mounted to the rear of the rear seat back upper. Refer to Figures 7-56, 7-57 and 7-58 for conductor routing as well as monitor and sender installations.

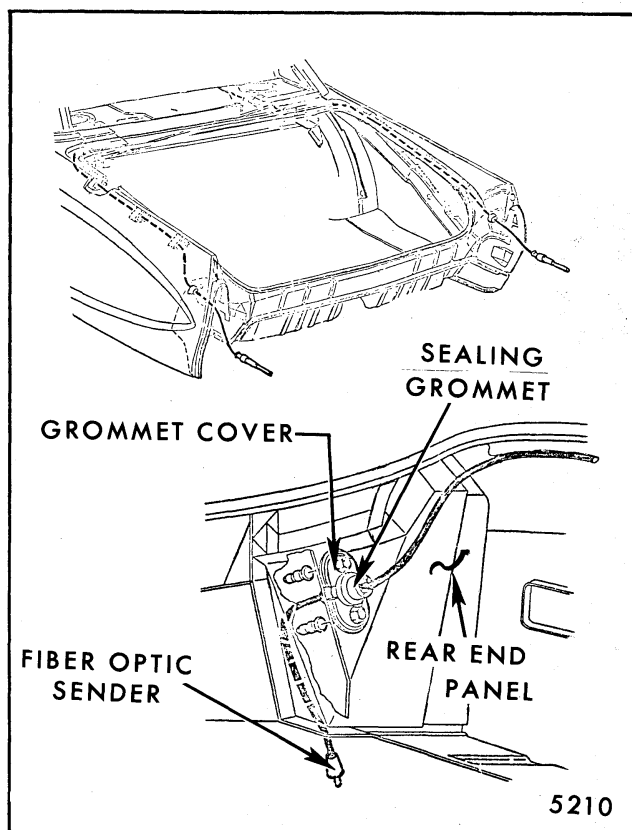


Fig. 7-56-Fiber Optic Routing - Cadillac and Buick "C-E" Styles

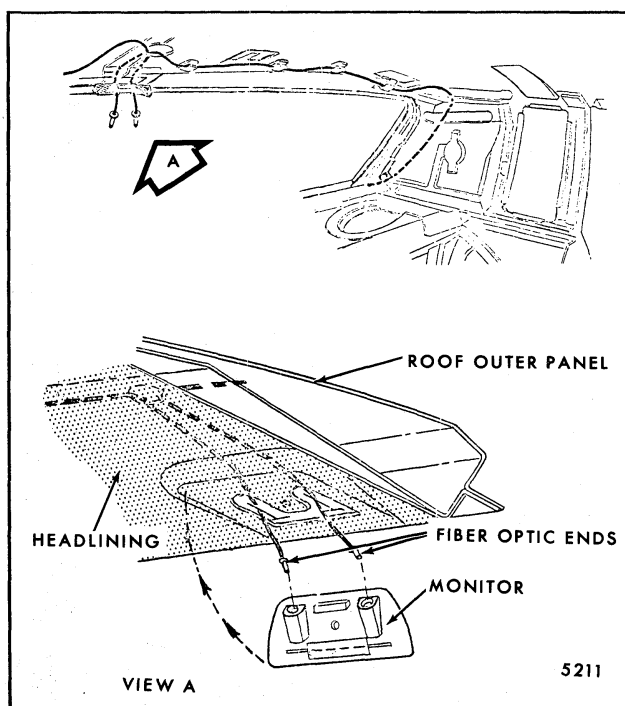


Fig. 7-57-Fiber Optic Monitor Installation - Cadillac and Buick "C-E" Styles, Except "Cadillac "E-67" Style

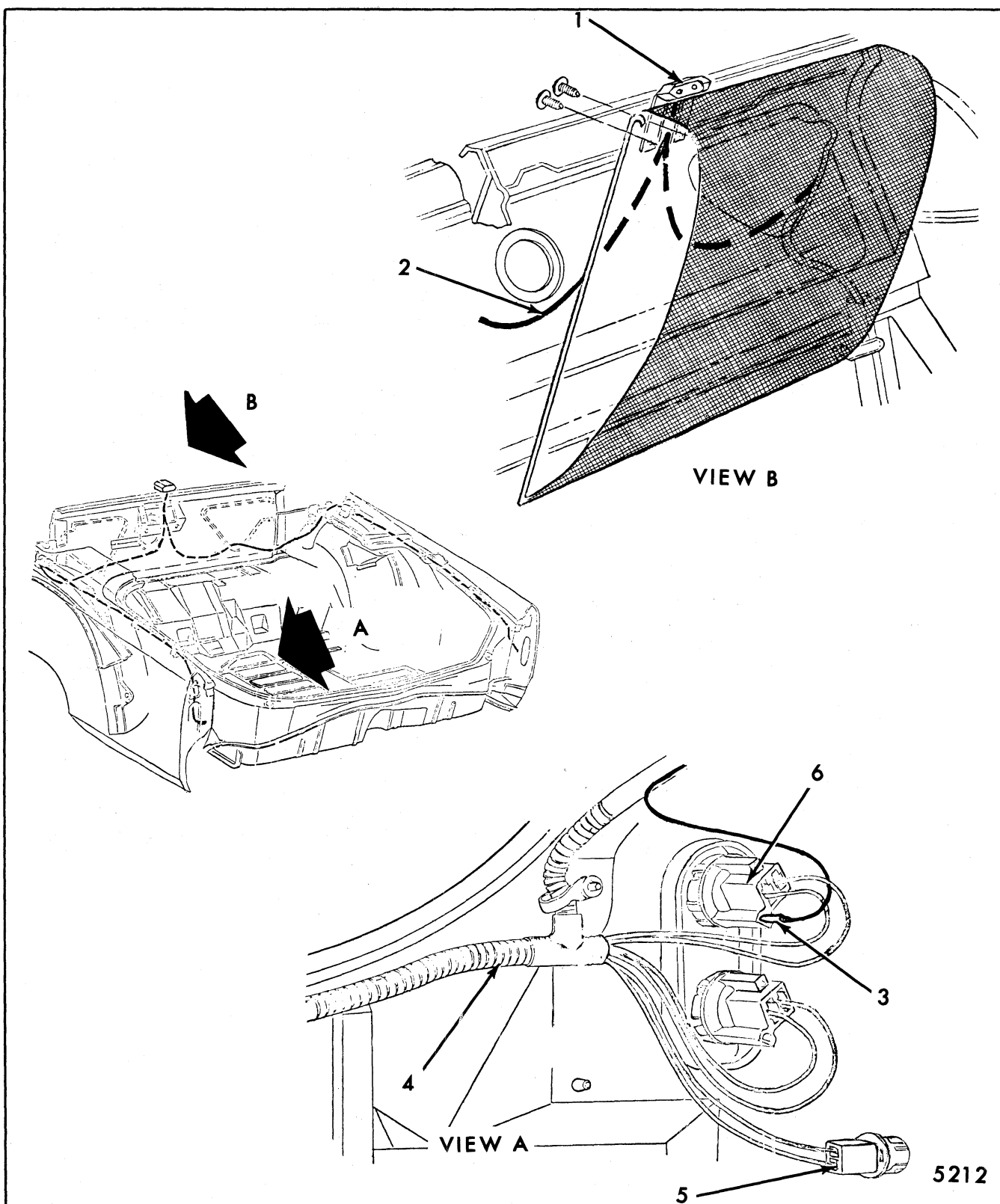


Fig. 7-58-Fiber Optic Monitor and Tail Lamp Sender Installation - Cadillac "E-67" Style

- | | | | |
|---------------------|---|----------------------------|---------------------|
| 1. Monitor | 3. Fiber Optic Sender - Inserts Into Tail Lamp Socket | 4. Tail Lamp Harness | 6. Tail Lamp Socket |
| 2. Fiber Optic Wire | | 5. Side Marker Lamp Socket | |

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EXTERIOR LAMPS

TAIL LAMPS

Various methods are employed to remove and install the components of tail lamp assemblies. The following illustrations, Figures 7-60 through 7-73, will provide a quick reference for performing the basic service operations for each Car Division on styles where the tail lamp assembly is installed on the body. If the tail lamp assembly is installed in the bumper refer to the chassis manual for service operations.

CAUTION: *Do not rework or alter the reflective surface of tail lamps or side marker lamps.*

EXTERIOR LAMP SEALING

Care should be exercised to prevent waterleaks at the tail lamp area when sealing surfaces are disturbed. Damaged gaskets should be replaced.

If new gaskets are not installed, the use of sealer (body caulking compound or equivalent) is recommended at critical areas and where the old gaskets have taken a set.

SIDE MARKER LAMPS

All styles incorporate a rear quarter side marker lamp which operates in conjunction with the tail lamp circuit. Some styles use a "wrap around" tail lamp assembly which doubles as a side marker lamp.

There are two basic methods of retention for these lamp housings:

1. Studs with nuts accessible from the rear compartment.
2. External screws - used on all station wagons.

COMPARTMENT FRONT PANEL LAMPS-OLDSMOBILE "E" STYLES

The lamp housings are mounted to integral studs on the back window drain panel and attached with nuts prior to installation of the applied rear compartment front panel. Bulb replacement can be accomplished from inside the rear compartment.

COMPARTMENT FRONT PANEL LAMPS - BUICK "E" STYLE

The lamp housings are bolted to the underside of the compartment front panel prior to compartment front panel installation. Bulb replacement can be accomplished by removing only the die cast lamp cover (two bolts) at each lamp assembly.

OPERA LAMP - CADILLAC STYLES

The lamp assembly mounted on the quarter panel sail area is attached with screws accessible under the screw attached lens.

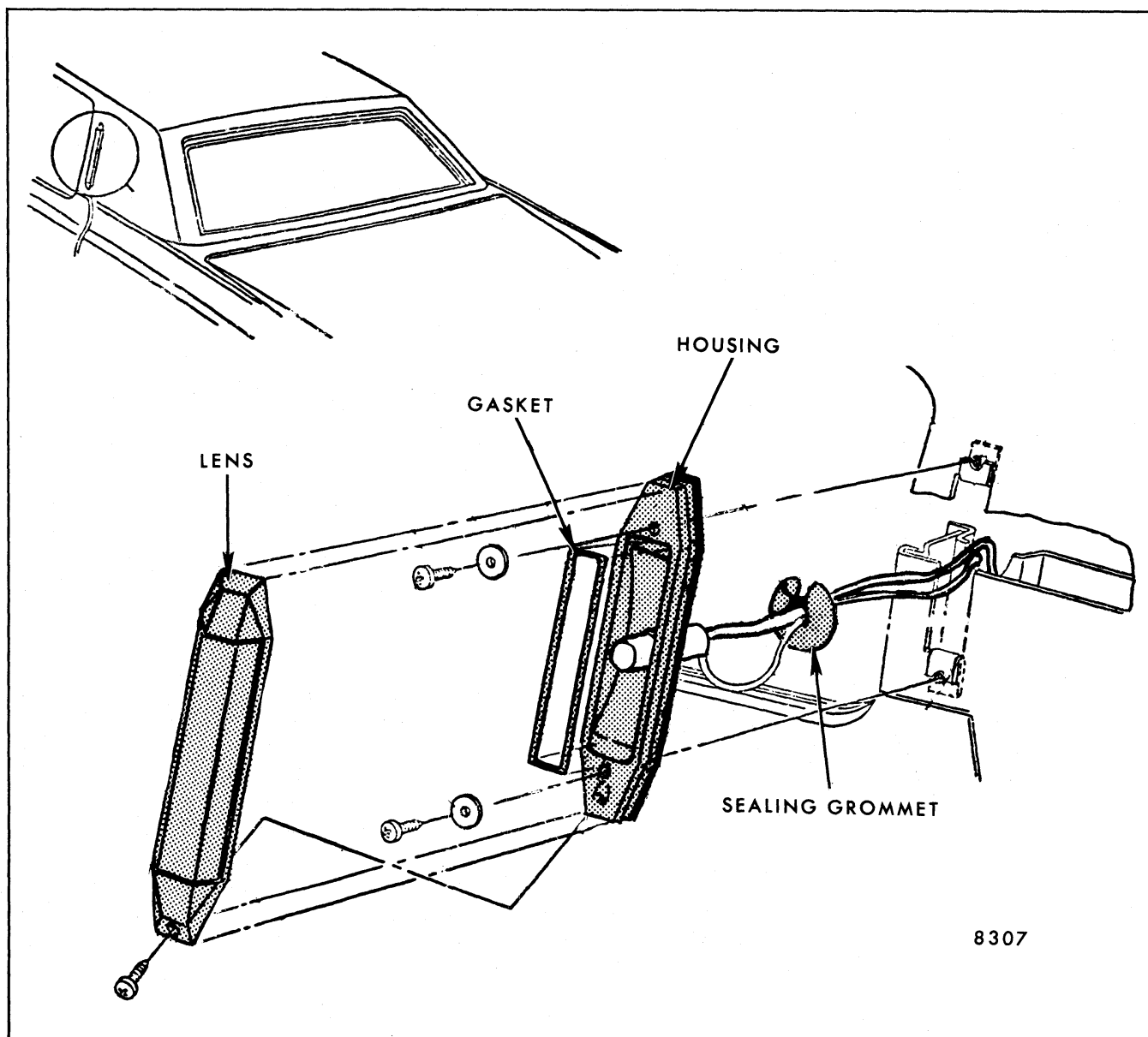


Fig. 7-59-Opera Lamp Installation - Cadillac Styles

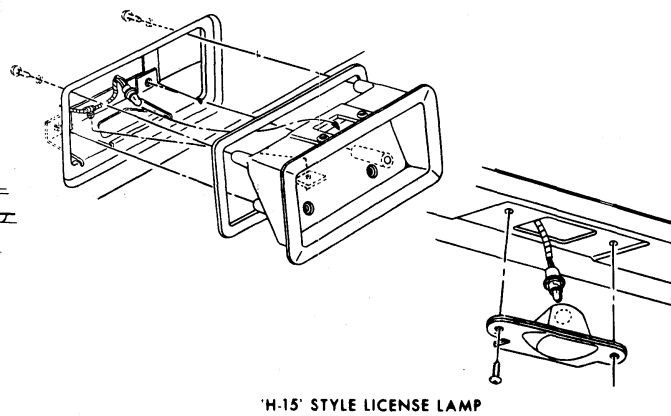
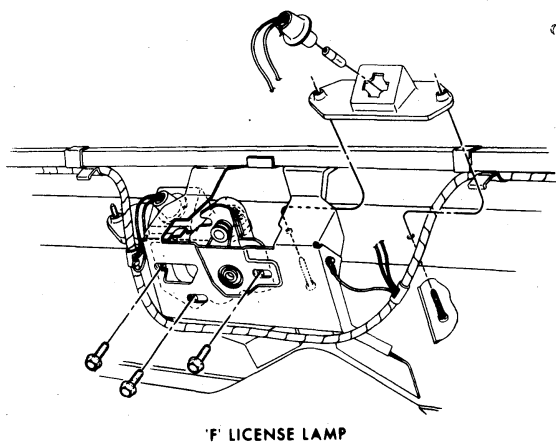
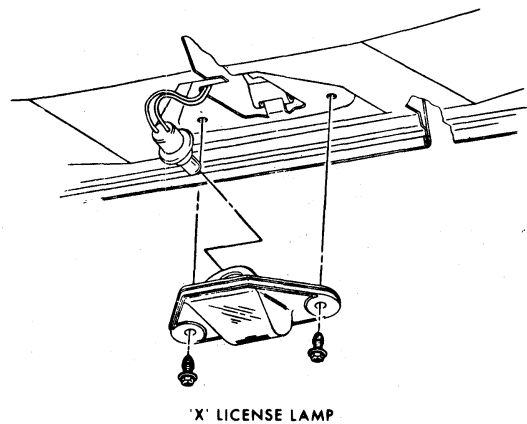
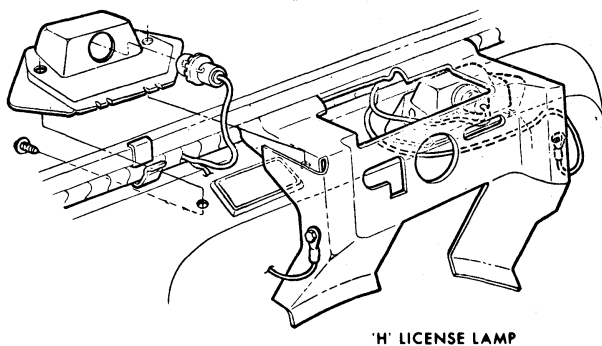
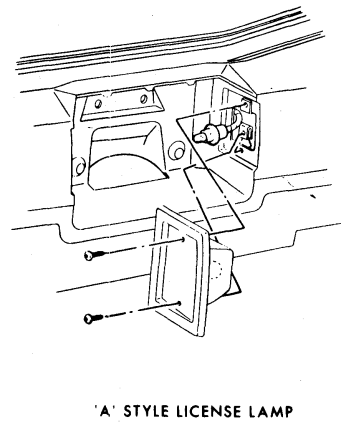
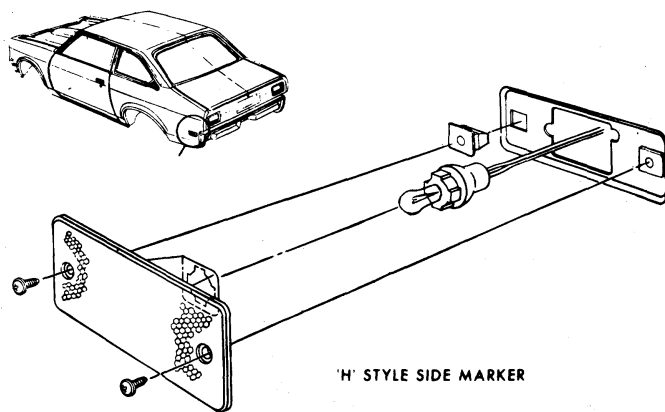
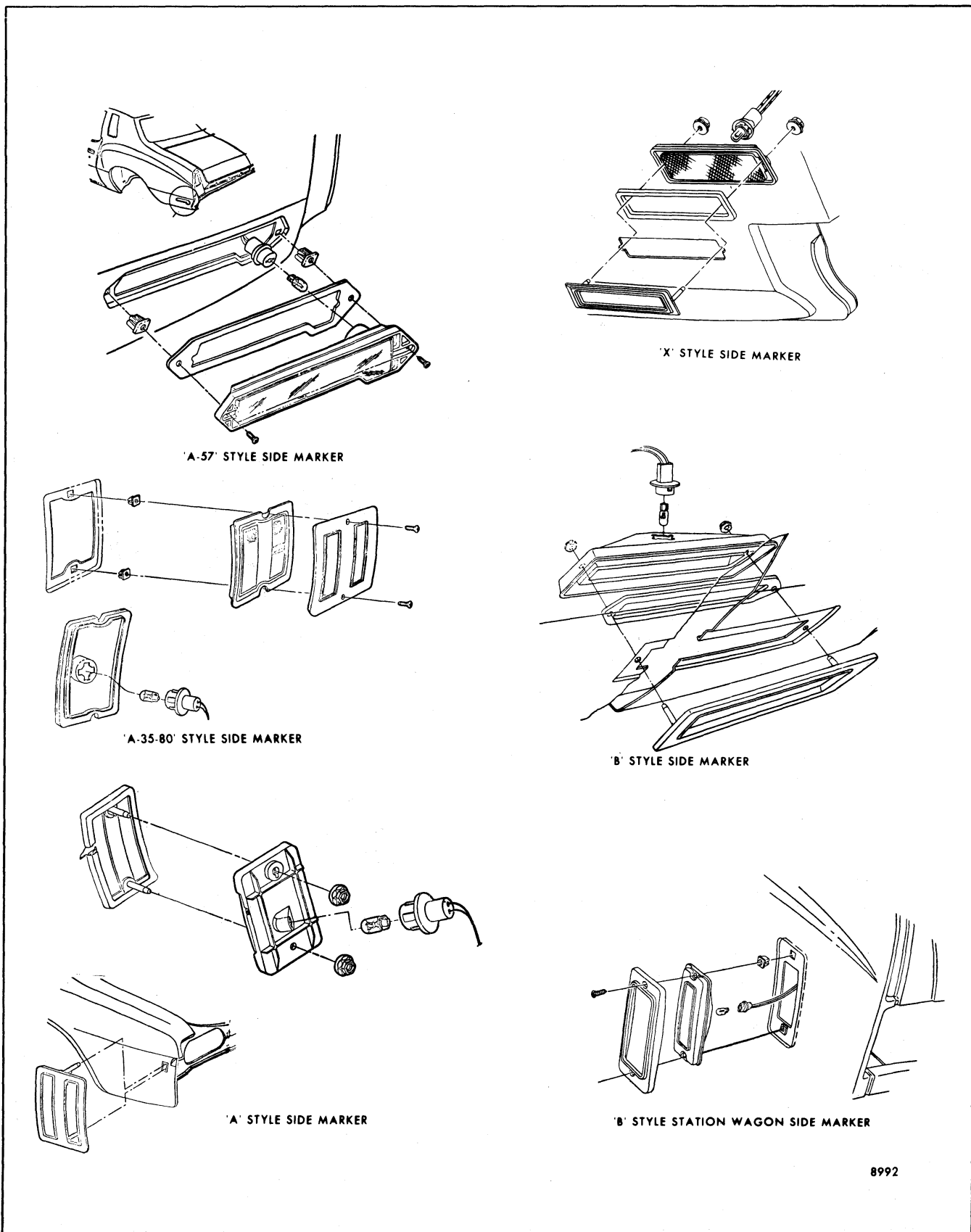
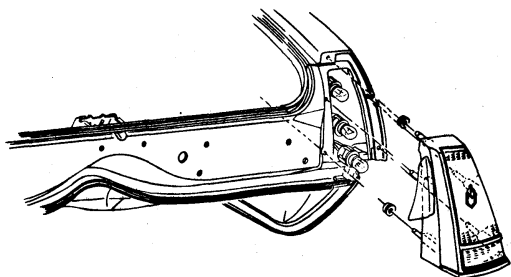


Fig. 7-60-Exterior Lamp Installation - Chevrolet Styles

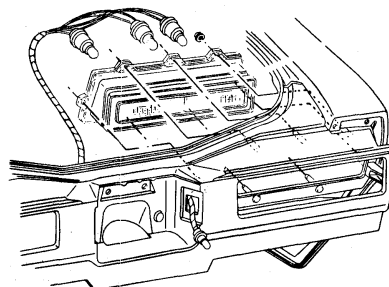


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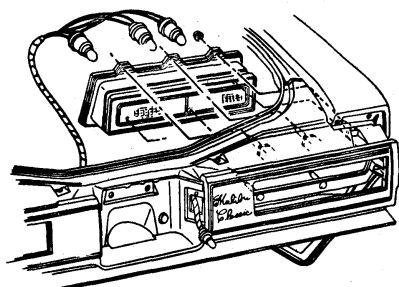
Fig. 7-61-Exterior Lamp Installation - Chevrolet Styles



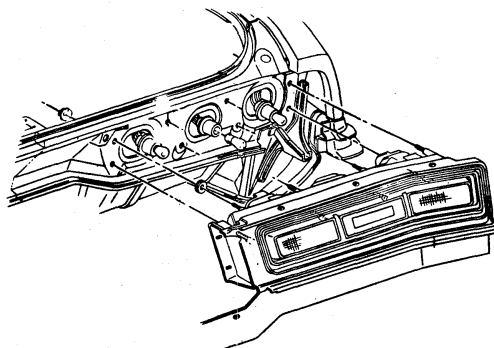
"A-57" TAIL LAMP



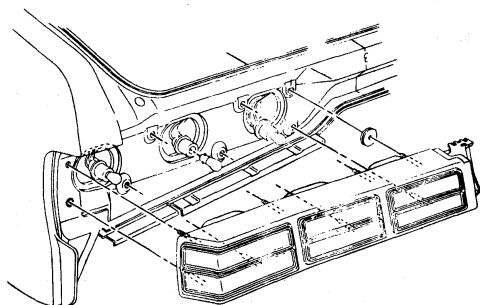
"IAC-1AE 29-37" TAIL LAMP



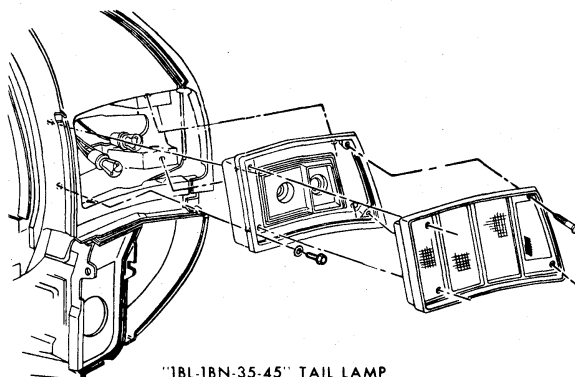
"IAD29-37" TAIL LAMP



"IBL39-47-69" TAIL LAMP

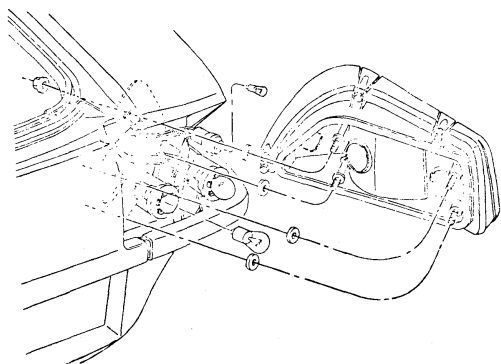


"IBN39-47-69" TAIL LAMP

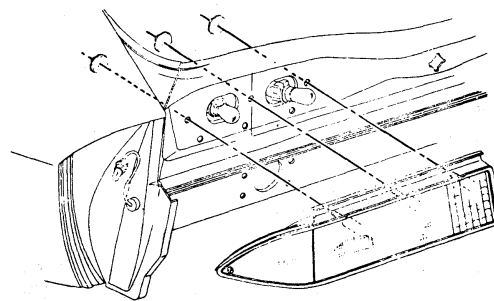


"IBL-IBN-35-45" TAIL LAMP

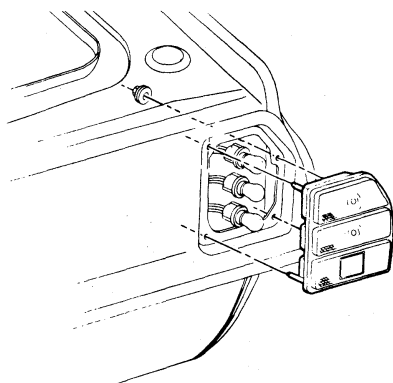
Fig. 7-62-Exterior Lamp Installation - Chevrolet Styles



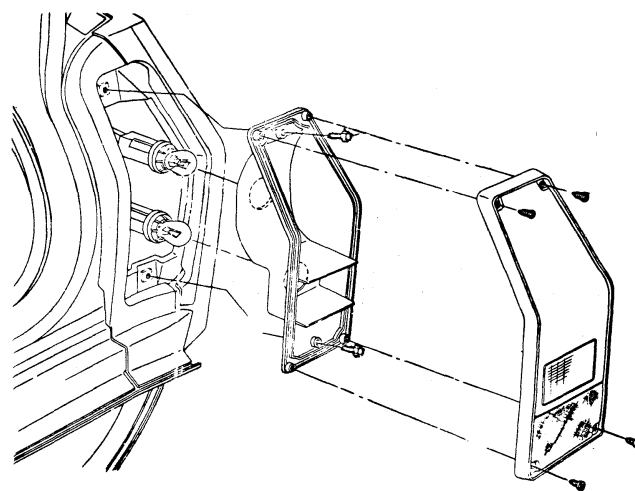
"IFQ-1F5-87" TAIL LAMP



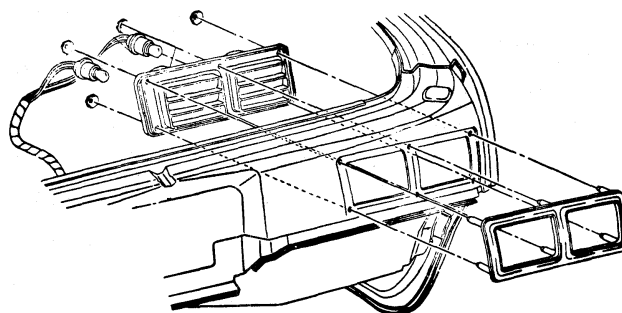
"1HM-1HR-07" TAIL LAMP



"1HV11-77" TAIL LAMP



"1HV15" TAIL LAMP



"1XX-1XY-17-27-69" TAIL LAMP

Fig. 7-63-Exterior Lamp Installation - Chevrolet Styles

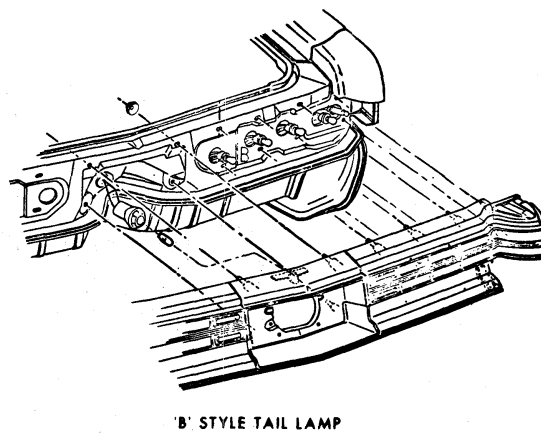
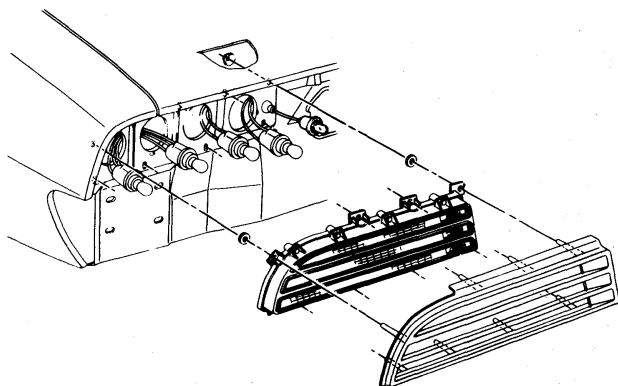
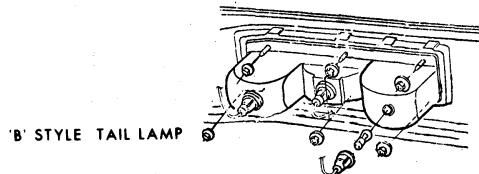
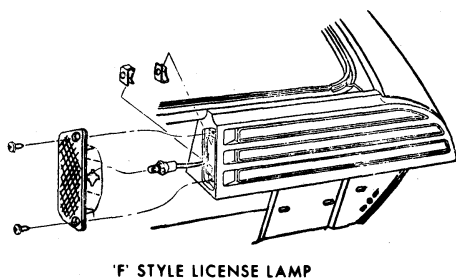
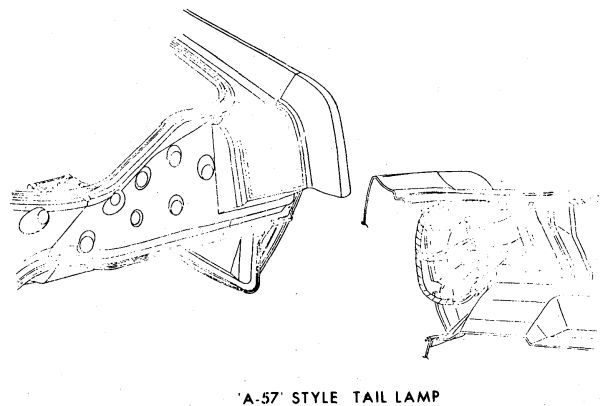
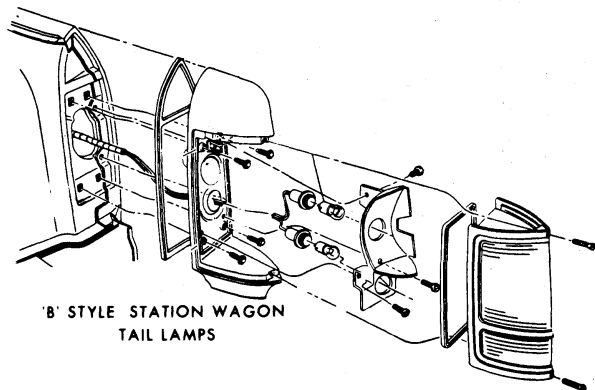
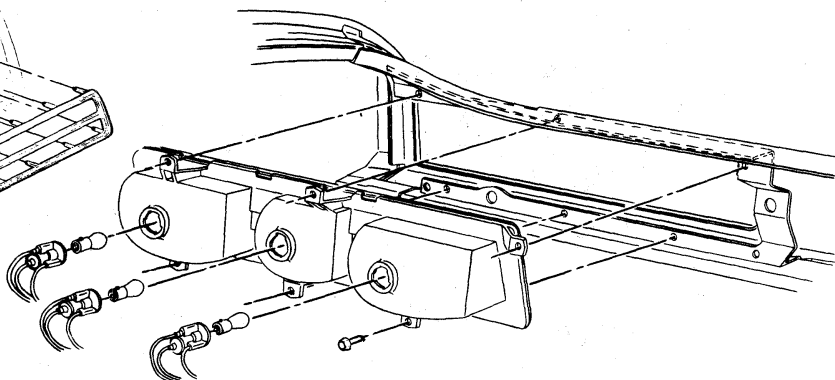
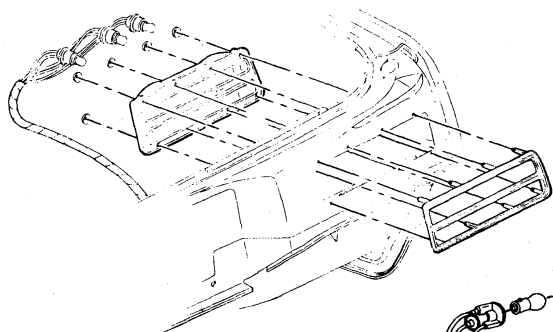
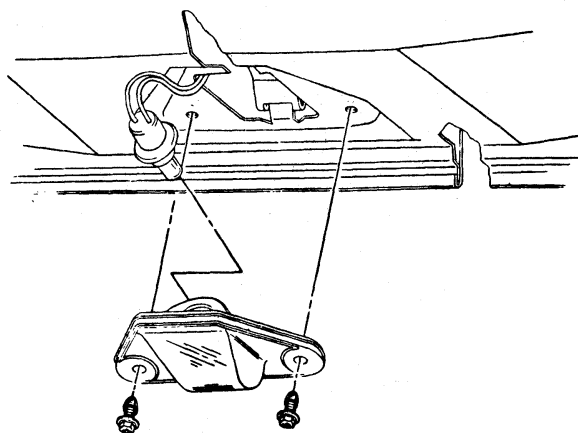


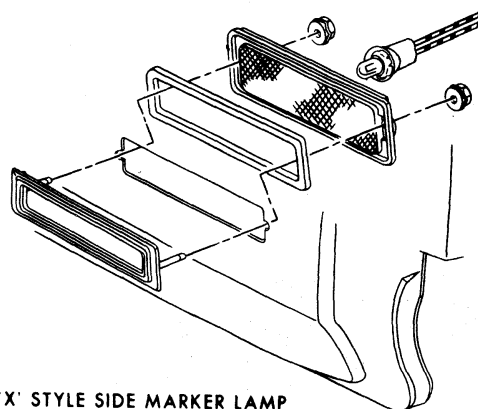
Fig. 7-64-Exterior Lamp Installation - Pontiac Styles



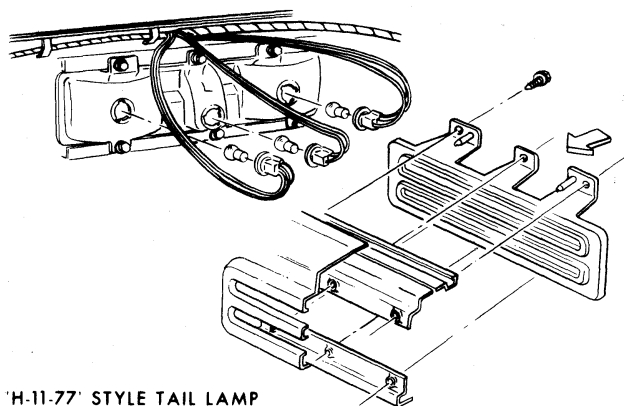
'X' STYLE TAIL LAMP



'X' STYLE LICENSE LAMP

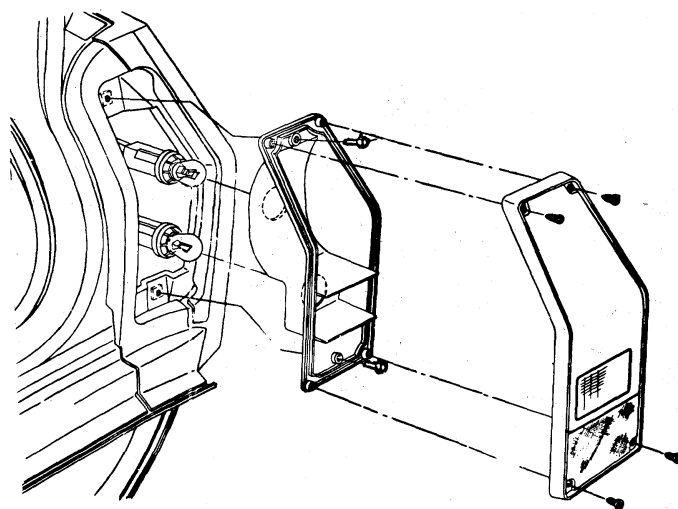


'X' STYLE SIDE MARKER LAMP

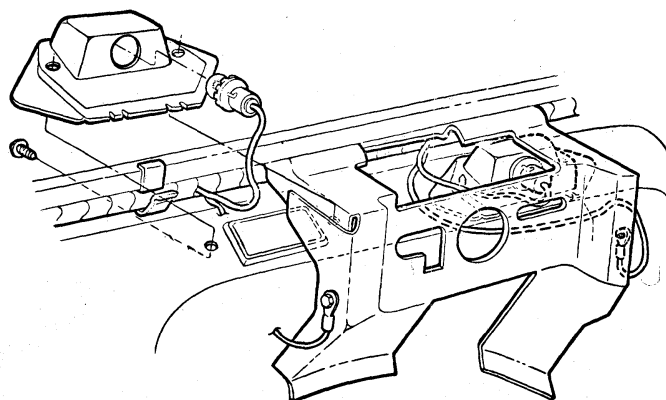


'H-11-77' STYLE TAIL LAMP

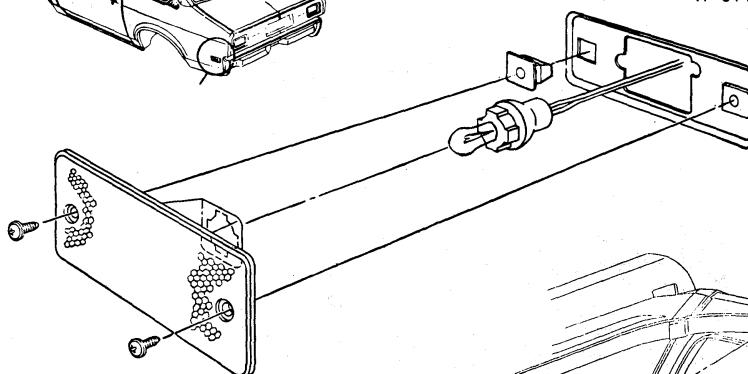
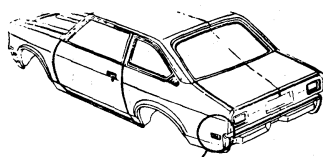
Fig. 7-65-Exterior Lamp Installation - Pontiac Styles



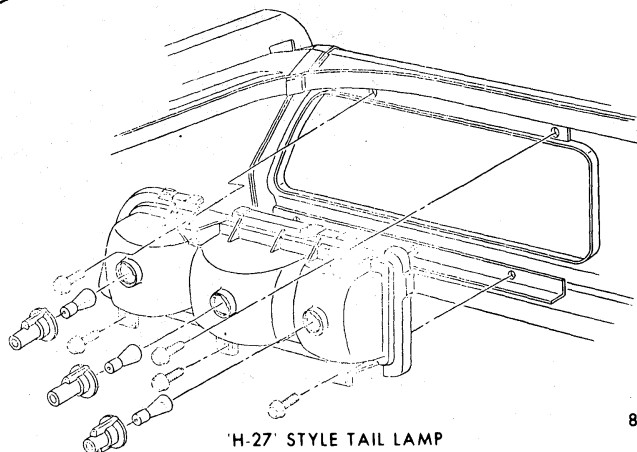
'H-15' STYLE TAIL LAMP



'H' STYLE LICENSE LAMP



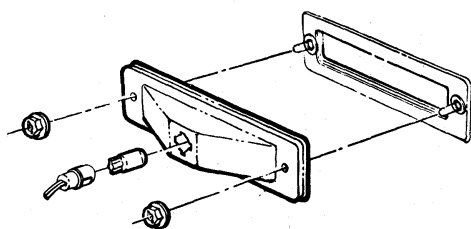
'H' STYLE SIDE MARKER



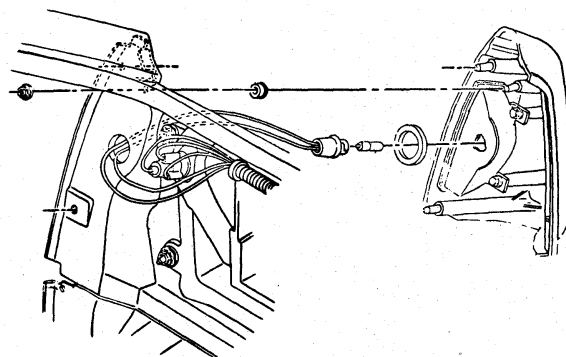
'H-27' STYLE TAIL LAMP

8997

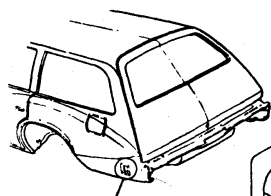
Fig. 7-66-Exterior Lamp Installation - Pontiac Styles



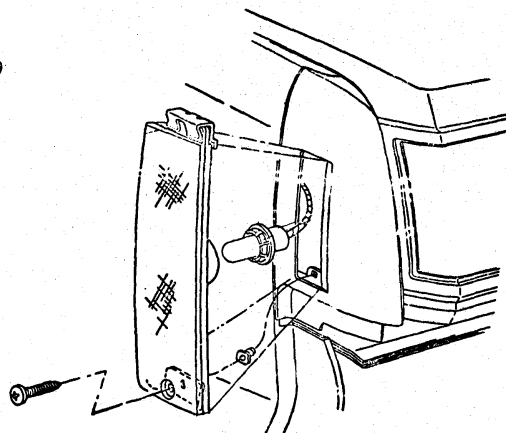
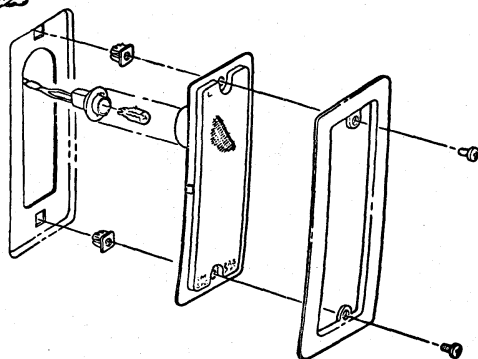
'A' STYLE SIDE MARKER LAMP



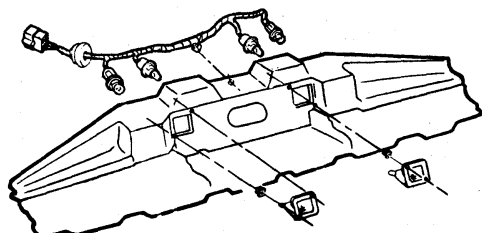
'A-57' STYLE SIDE MARKER LAMP



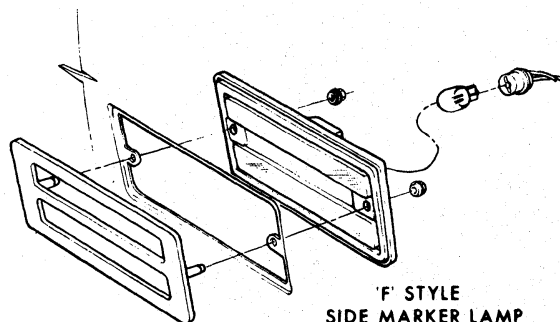
'A' STYLE
STATION WAGON
SIDE MARKER LAMP



'B' STYLE SIDE MARKER LAMP



'A-57' STYLE BACK-UP LAMP



'F' STYLE
SIDE MARKER LAMP

Fig. 7-67-Exterior Lamp Installation - Pontiac Styles

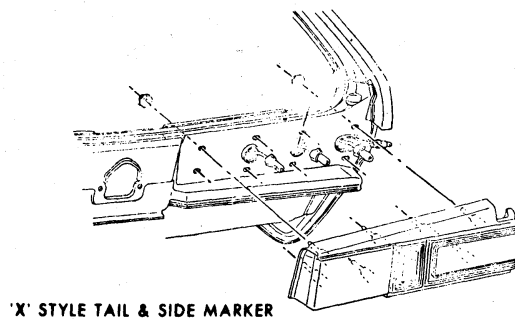
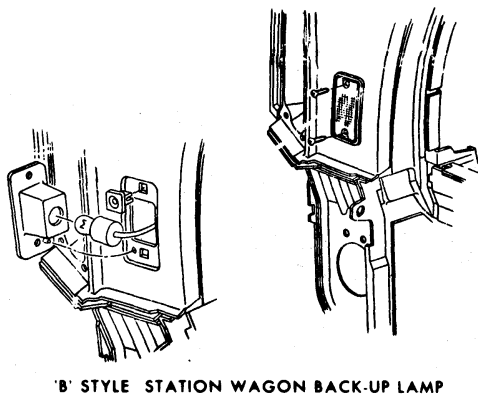
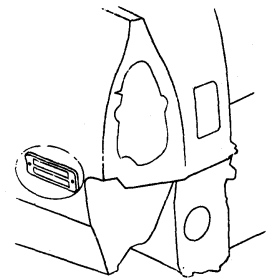
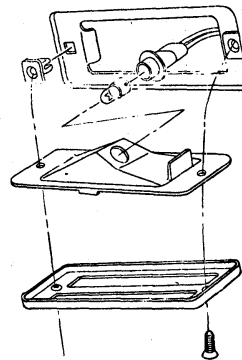
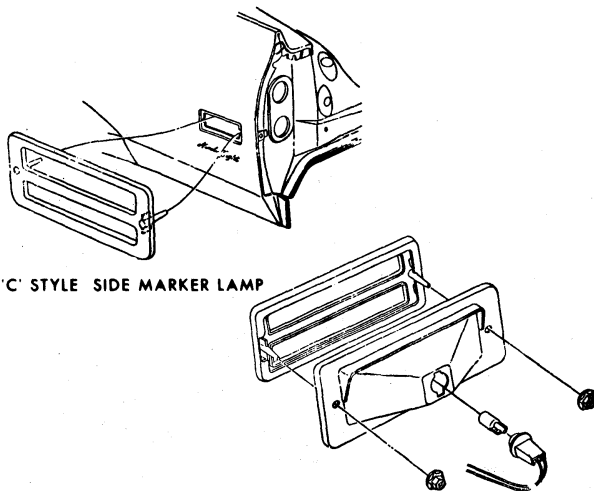
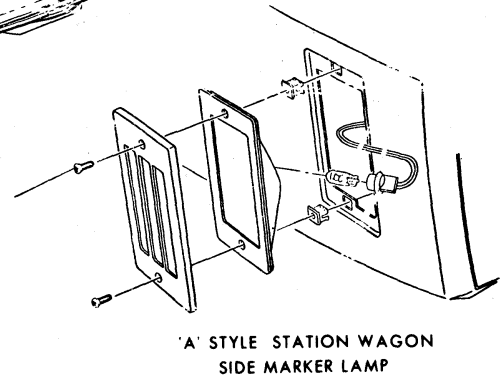
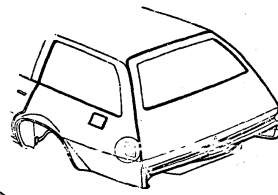
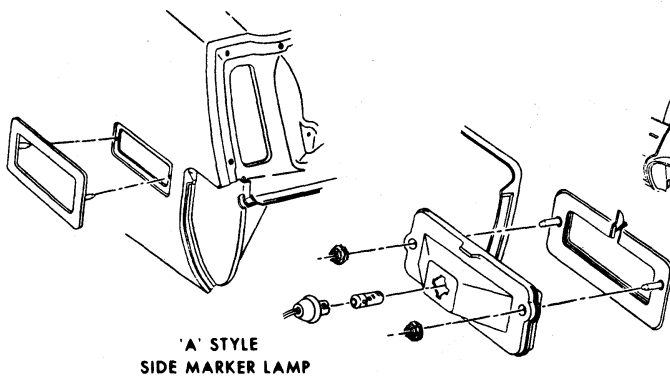
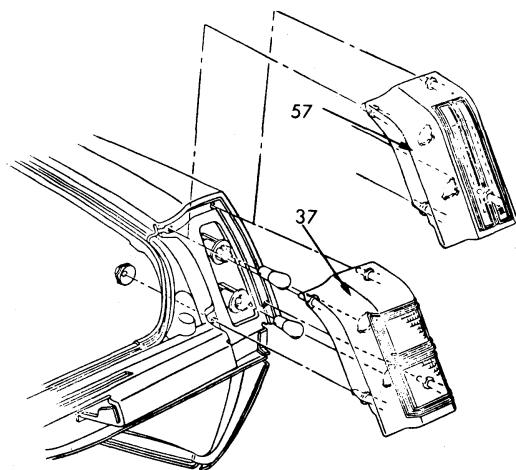
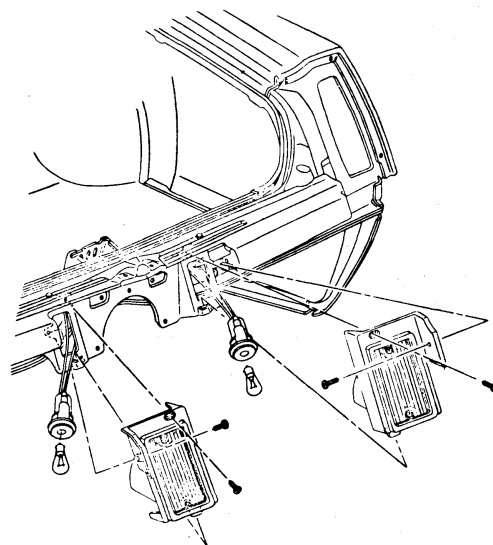


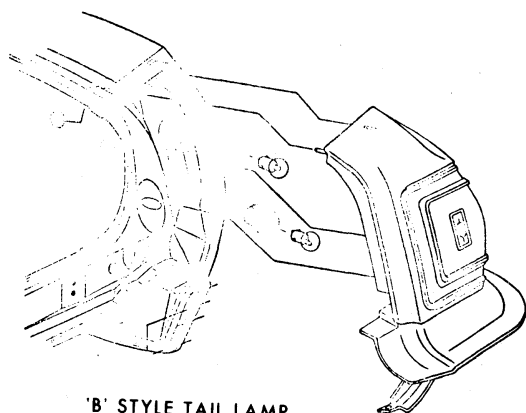
Fig. 7-68-Exterior Lamp Installation - Oldsmobile Styles



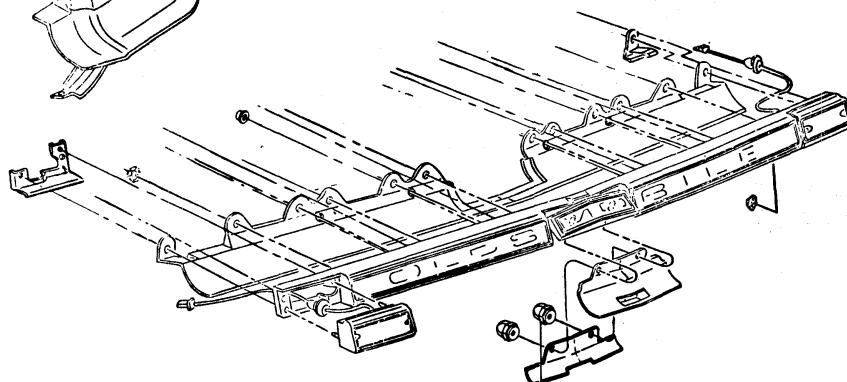
'A' STYLE TAIL LAMP



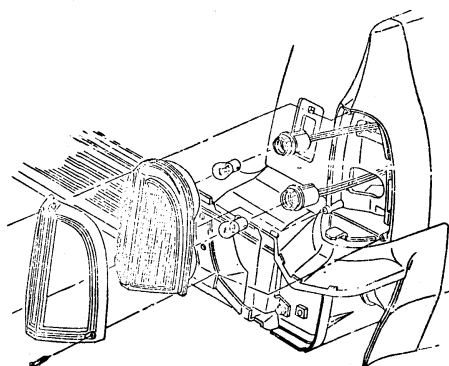
'A' STYLE BACK UP LAMP



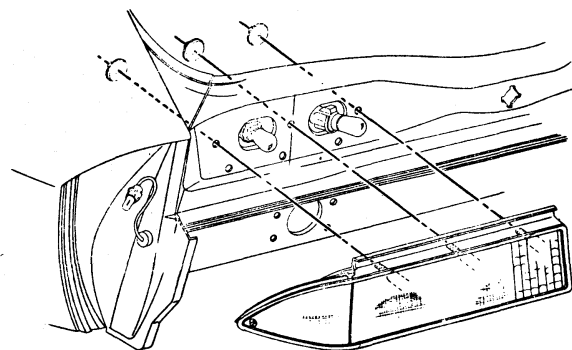
'B' STYLE TAIL LAMP



'B' STYLE BACK UP LAMP



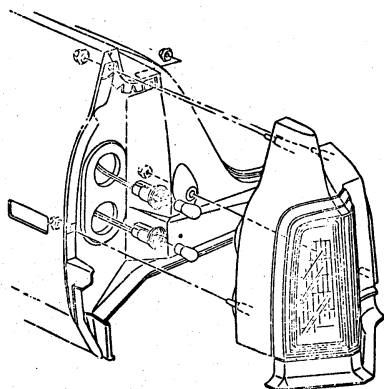
'B' STYLE STATION WAGON TAIL LAMP



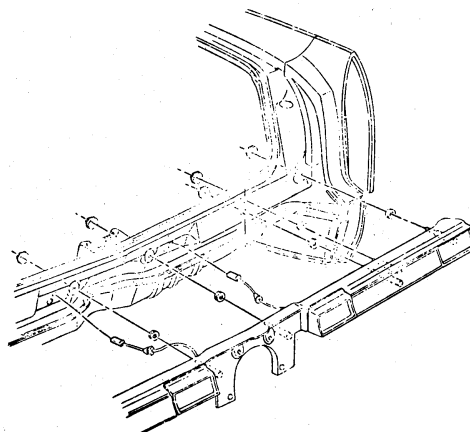
'H-07' TAIL AND SIDE MARKER

9000

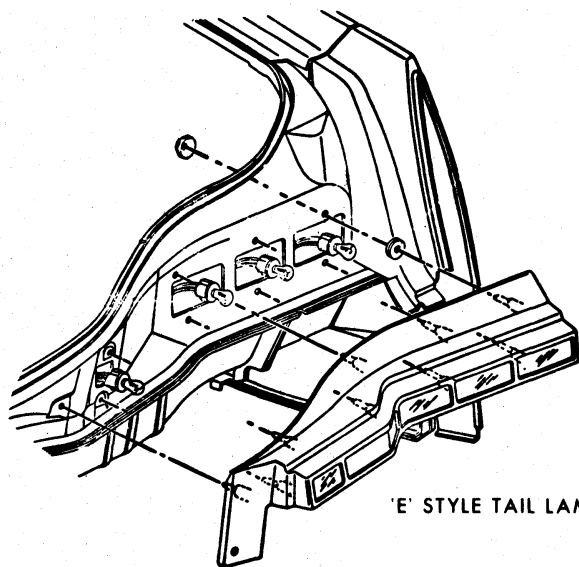
Fig. 7-69-Exterior Lamp Installation - Oldsmobile Styles



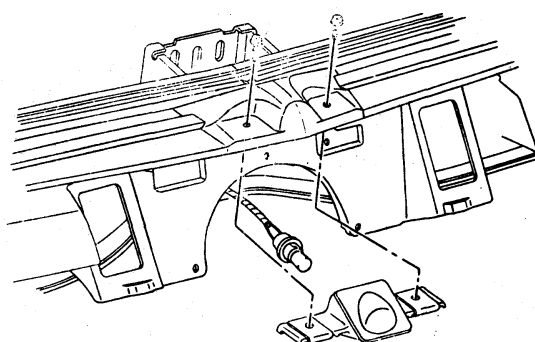
'C' STYLE TAIL LAMP



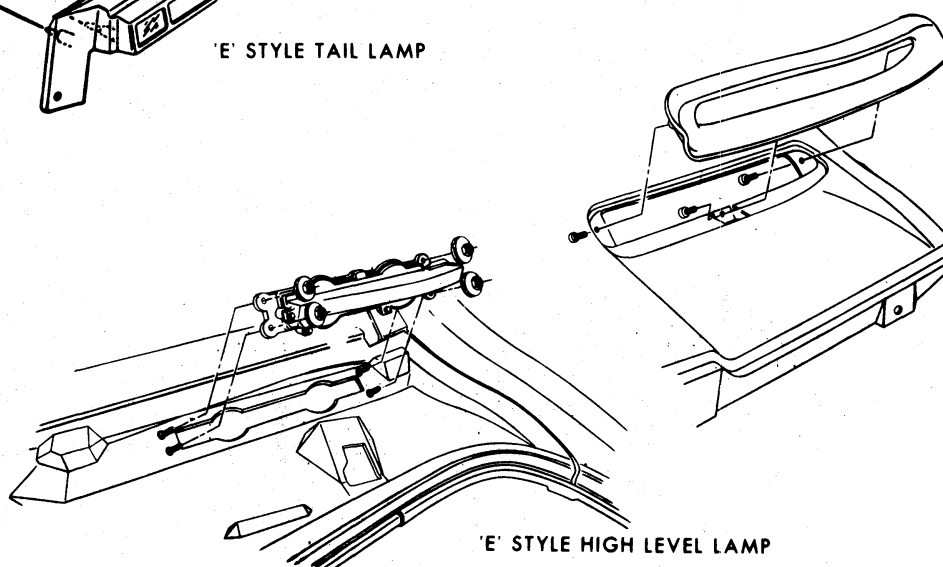
'C' STYLE BACK UP LAMP



'E' STYLE TAIL LAMP



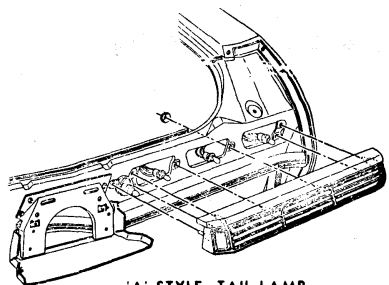
'A-37 57' LICENSE LAMP



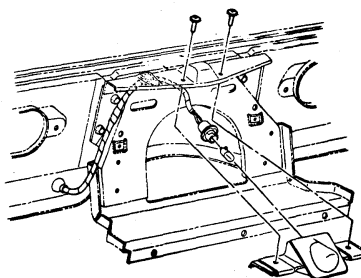
'E' STYLE HIGH LEVEL LAMP

9001

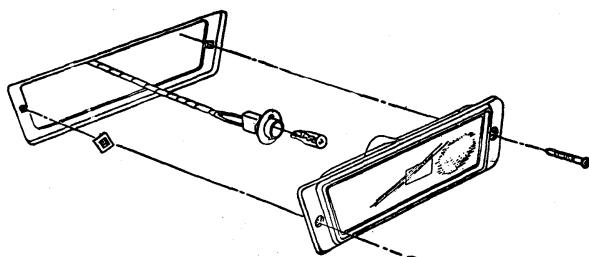
Fig. 7-70-Exterior Lamp Installation - Oldsmobile Styles



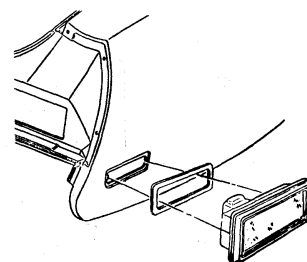
'A' STYLE TAIL LAMP



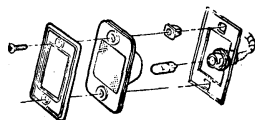
'A' STYLE LICENCE LAMP



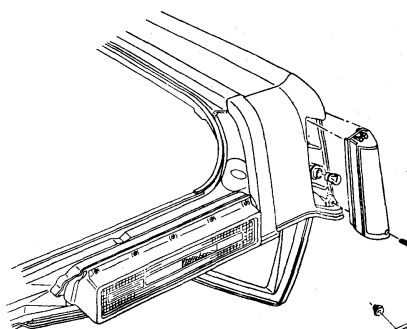
'A' STYLE STATION WAGON SIDE MARKER LAMP



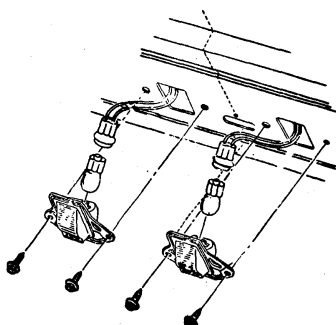
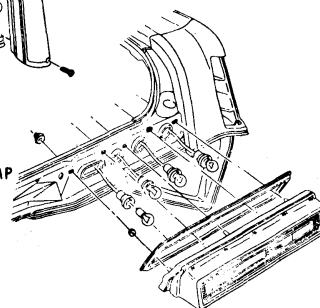
'A' STYLE SIDE MARKER LAMP



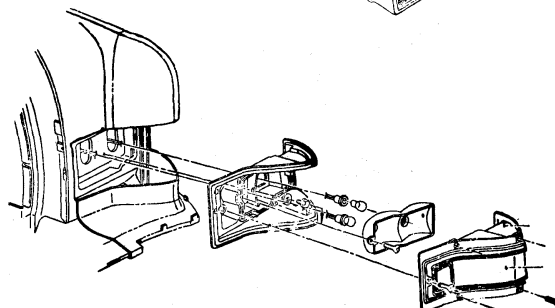
'B' STYLE STATION WAGON SIDE MARKER LAMP



'A-37 57' STYLE TAIL LAMP



'B' STYLE LICENSE LAMP



'B' STYLE STATION WAGON TAIL LAMP

Fig. 7-71-Exterior Lamp Installation - Buick Styles

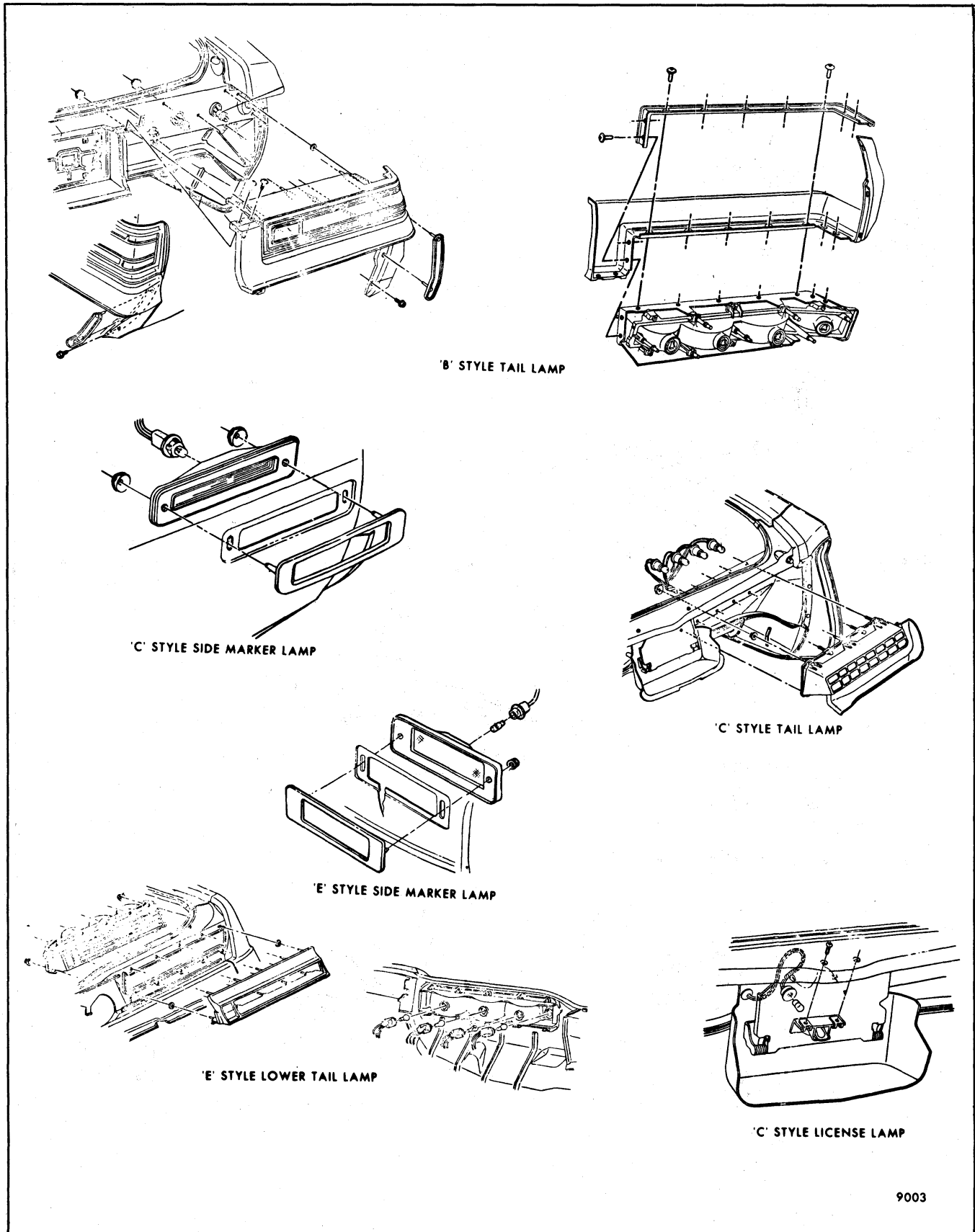
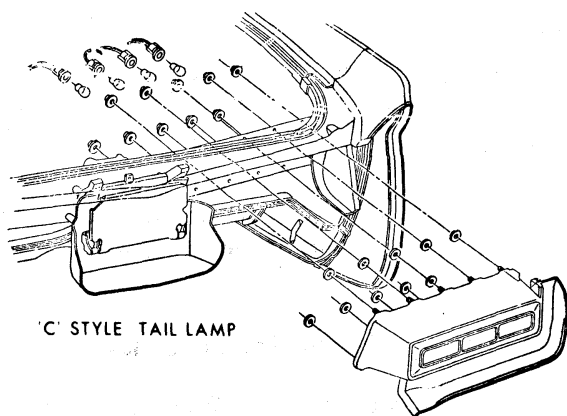
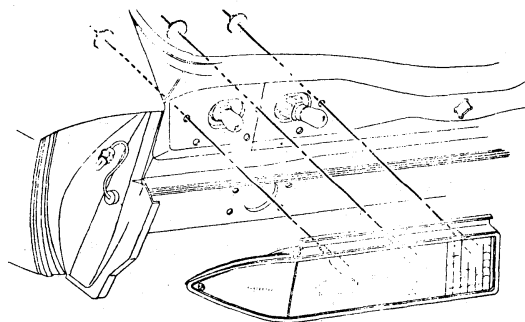


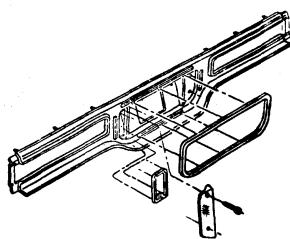
Fig. 7-72-Exterior Lamp Installation - Buick Styles



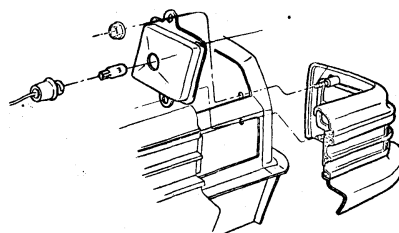
'C' STYLE TAIL LAMP



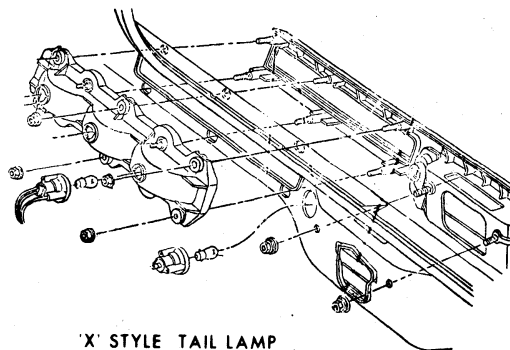
'H-07' TAIL AND SIDE MARKER



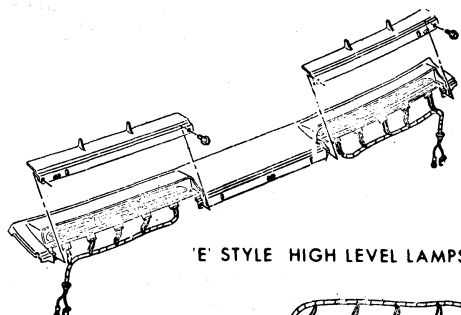
'X' STYLE BACK-UP LAMP



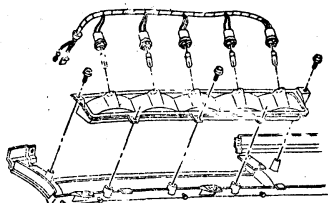
'X' STYLE SIDE MARKER LAMP



'X' STYLE TAIL LAMP



'E' STYLE HIGH LEVEL LAMPS



9004

Fig. 7-73-Exterior Lamp Installation - Buick Styles

STATION WAGON BACK DOOR - "H-15" Styles

DESCRIPTION

The back door consists of an inner and outer panel bonded with structural adhesive. A stationary glass is retained within the back door by means of a rubber channel. The door is hinged at the top of the opening with hinges which are adjustable on the door side. The door is counterbalanced with a pair of torque rods which provide ease of operation and hold-open. A lock is welded onto the back door with adjustment provided through the striker which is bolted to the rear cross bar (Fig. 7-74). A license plate pocket assembly which incorporates two lamps is mounted into the lower center portion of the back door outer panel.

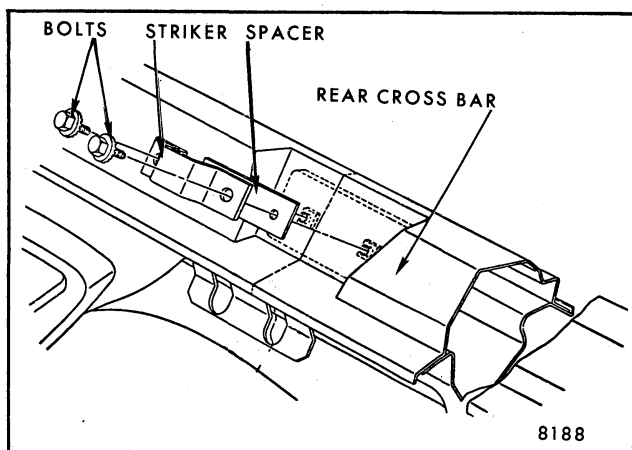


Fig. 7-74-Back Door Striker Installation - "H-15" Styles

Removal and Installation

1. With the assistance of a helper to support door in full-open position, remove hinge strap to back door attaching bolts (Fig. 7-75) on both sides of door and remove back door.

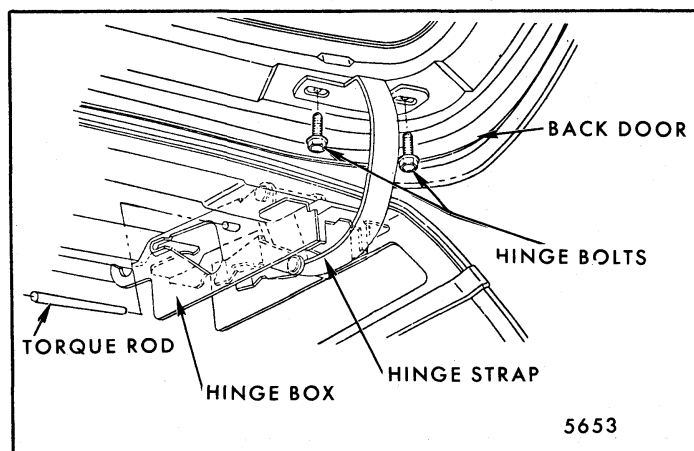


Fig. 7-75-Back Door Hinge Attachment - "H-15" Styles

2. Disconnect license lamp wire harness adjacent to left hinge. On styles equipped with electrically heated back windows disconnect feed wire connector from terminal on upper corner of back window.
3. To install, reverse removal procedure. Check door fit and operating effort.

Removal and Installation - Lock Cylinder

1. Open back door and disengage license plate inner panel access hole cover (Fig. 7-76).
2. Working through access hole, remove locking rod from lock cylinder (Fig. 7-77).
3. Remove retainer from lock cylinder.
4. To install, reverse removal procedure. Make certain sealing gasket seats properly to outer panel.

If new lock cylinder is being installed, code cylinder as described in "General Information" Section.

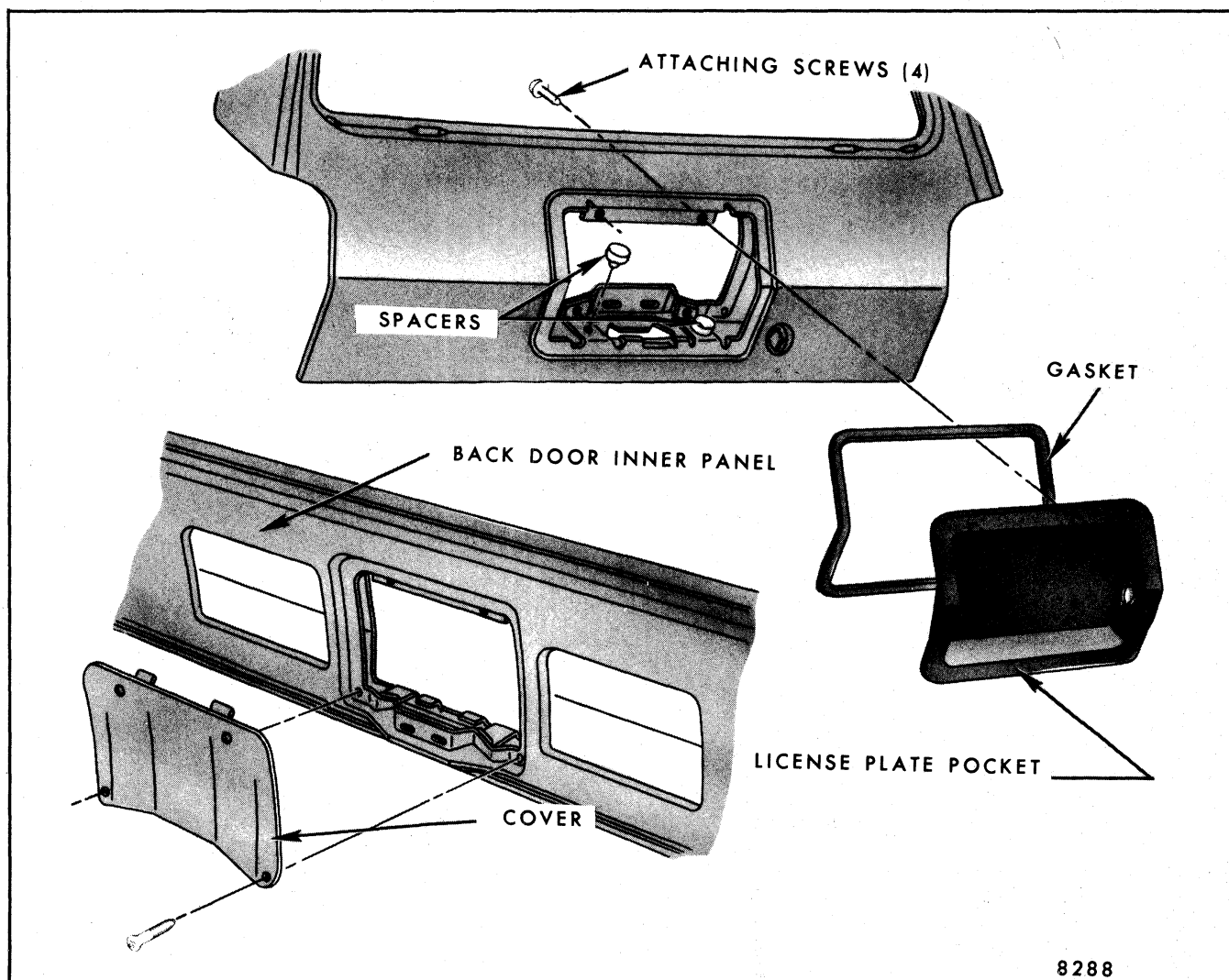
LOCK

Description

The back door lock is spot welded to a reinforcement which is then spot welded to the back door. Individual lock replacement can be made with the procedure listed below. It is not necessary to transfer lock when REPLACING back door as service part. Back door will include welded-in lock.

Removal

1. Remove back door lock cylinder and locking rod.
2. Drill out spot welds securing back door inner panel at lock reinforcement (Fig. 7-78) using spot weld cutter tool J-8943-01 or equivalent.
3. As lock is spot welded to the reinforcement, remove lock and reinforcement assembly from back door.
4. Scribe location of lock on reinforcement, using spot weld cutter J-8943-01 or equivalent, drill out spot welds securing lock to reinforcement.



8288

Fig. 7-76-License Plate Pocket and Inner Cover - "H-15" Styles

Installation

1. Position and clamp new lock to back door inner panel reinforcement within scribe marks of lock previously removed.
2. Gas weld or spot weld new lock to reinforcement. Use a minimum of four spot welds or two 1/2" of gas weld.
3. Load lock and reinforcement assembly into back door and position reinforcement in same location as it was prior to removal.
4. Working through 3/8" holes that were drilled to remove lock and reinforcement, gas weld reinforcement to back door inner panel.
5. Metal finish and refinish as required.

WEATHERSTRIP (Refer to Figure 7-79)

Description

A bulbular clinch type weatherstrip is snapped on the pinchweld around the back door opening. The weatherstrip serves as a weatherseal and a finishing lace and requires no cement except at the butt joint. A mastic material is incorporated within the clinch cavity which seals the weatherstrip to the pinchweld flange. The butt joint utilizes a plug and weatherstrip cement to maintain shape and sealing.

Removal and Installation

1. Separate butt joint at the center of the rear cross bar.

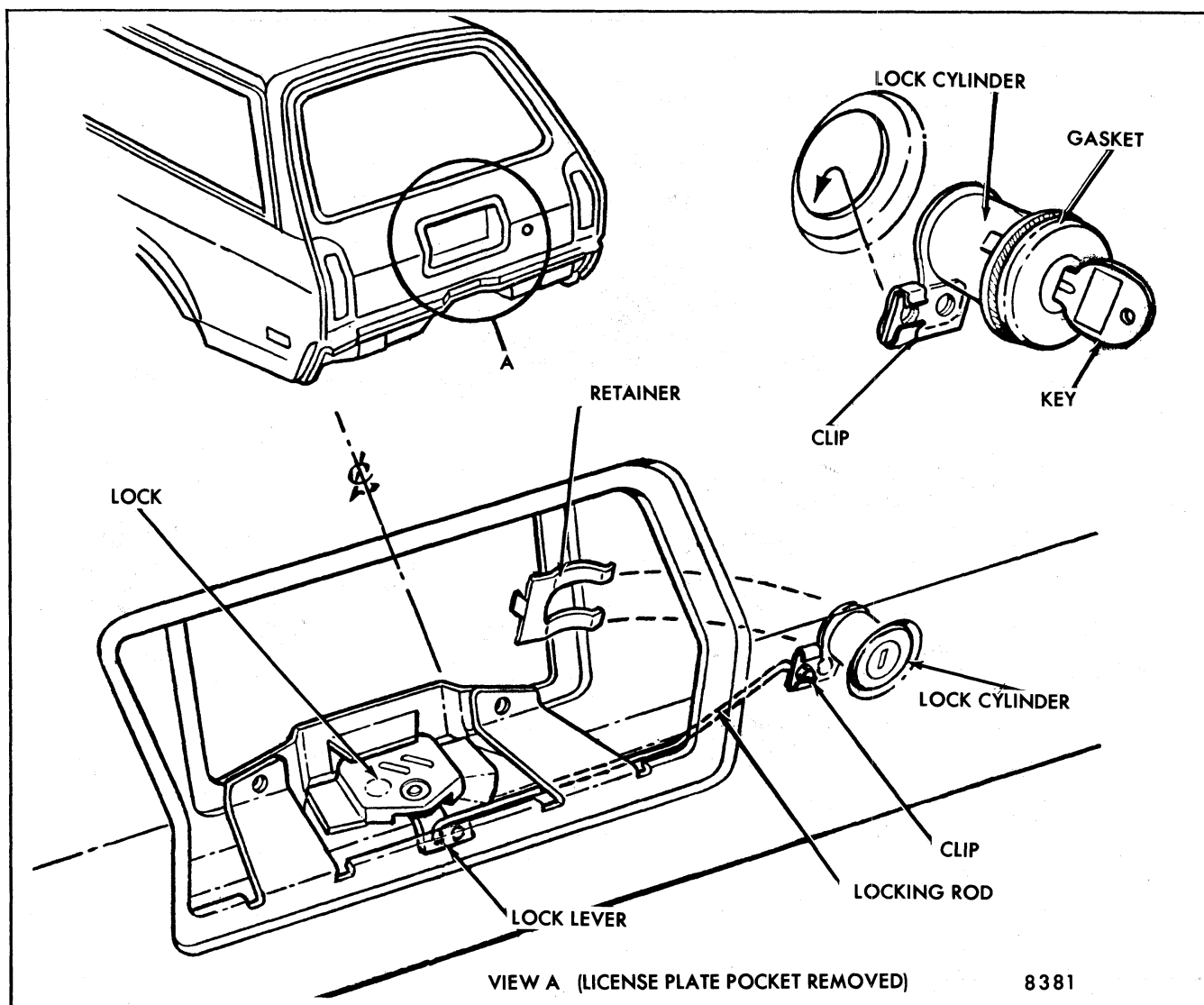


Fig. 7-77-Lock Cylinder Installation - "H-15" Styles

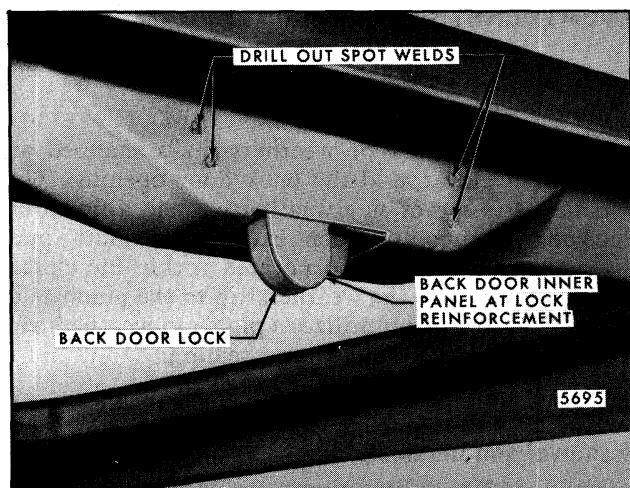


Fig. 7-78-Back Door Lock - "H-15" Styles

2. Peel weatherstrip from pinchweld flange. Do not pull on bulbular section of weatherstrip as it may tear.
3. To install, begin inserting center of weather strip (marked with paint) onto gutter pinchweld flange at the top center of the opening between hinges. Be sure the clinch cavity containing the mastic is completely seated to the pinchweld flange around the entire opening.
4. Insert the old plug into the weatherstrip at the butt joint and cement joint.

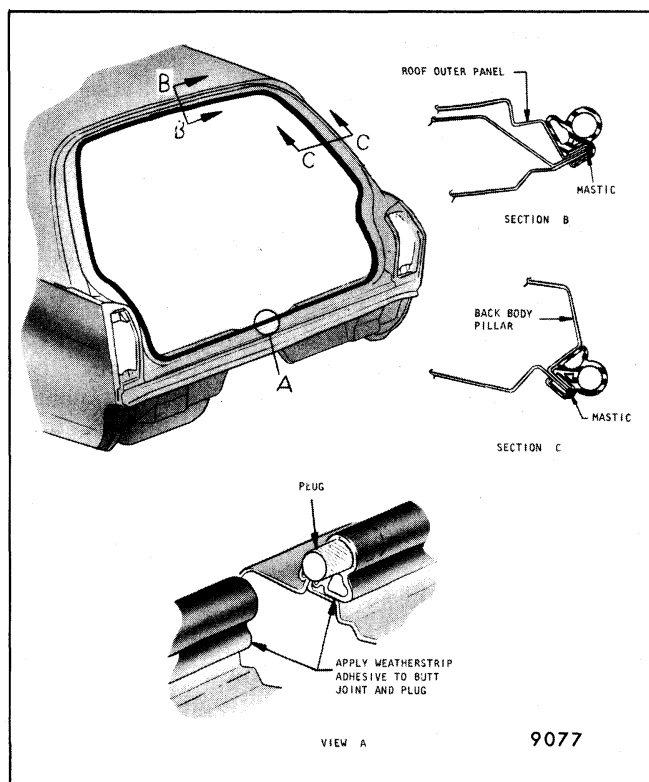


Fig. 7-79-"H-15" Back Door Weatherstrip

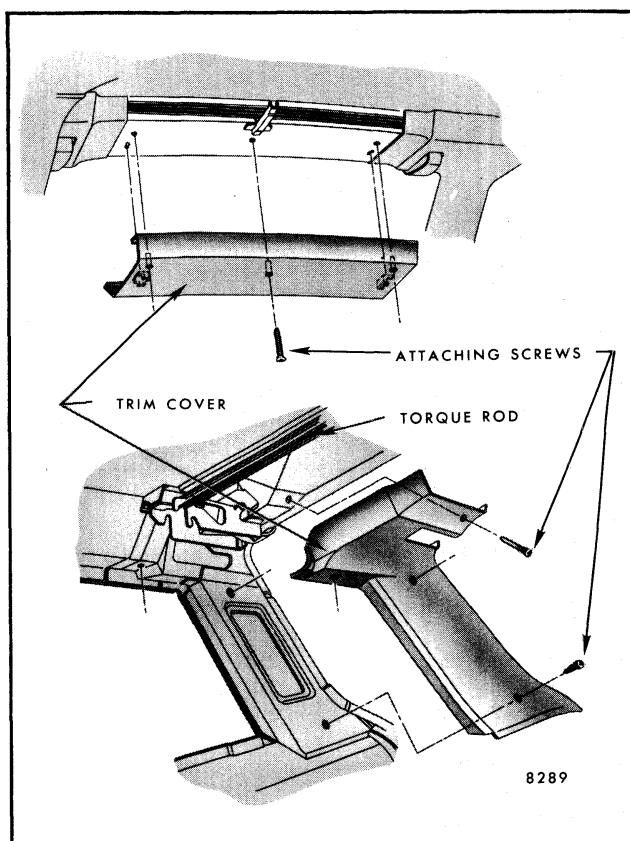


Fig. 7-80-Torque Rod Trim Removal - "H-15" Styles

STATION WAGON BACK DOOR TORQUE RODS - "H-15" STYLES

Description

Torque rods are used to control the amount of effort to operate the back door and can be adjusted to increase or decrease operating effort.

Adjustments

1. To increase the amount of effort required to raise the back door or to decrease the amount of effort required to close the back door, reposition the end of the rod to a lower torque rod adjusting notch (Fig. 7-81).
2. To decrease the amount of effort required to raise the back door or increase the amount of effort required to close the back door, reposition the end of the rod to a higher torque rod adjusting notch (Fig. 7-81).

Removal and Installation

1. For removal and/or adjustment of back door torque rods, use tool J-24877 or equivalent.

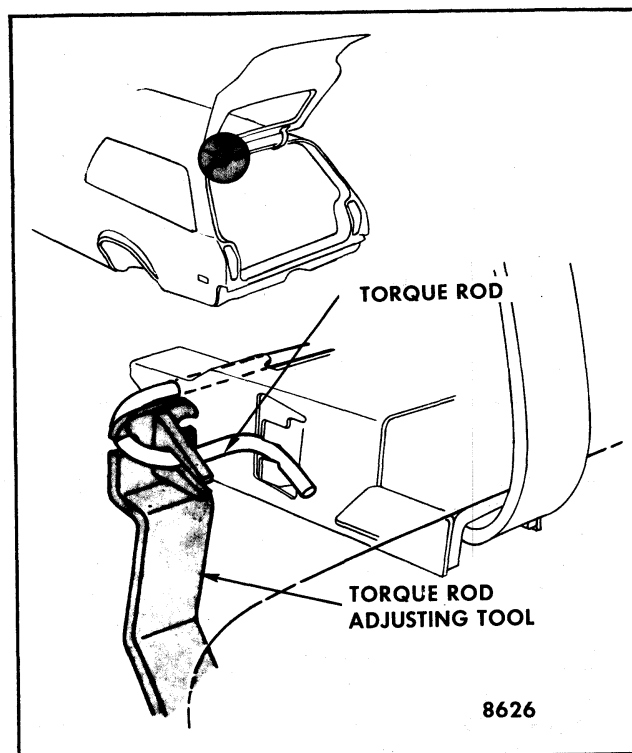


Fig. 7-81-Torque Rod Adjustment - "H-15" Styles

2. To remove torque rods, open back door and remove trim covers as shown in Figure 7-80, disengage end of torque rod from adjusting notches as shown in Figure 7-81. Then allow handle of removal tool to rotate forward to relieve tension on rod.

3. Disengage opposite end of torque rod from adjusting notches and remove from body.

4. To install, reverse removal procedure.

STATION WAGON TAILGATE - "A-35" STYLE

DESCRIPTION (Refer to Figure 7-82)

The "A" style tailgate consists primarily of an inner panel, outer panel and a stationary glass. It is hinged at the top of the back body opening and secured by

means of a striker-lock combination at the bottom of the opening. The gate is unlocked with the round key inserted into a lock cylinder at the lower center area of the tailgate outer panel. An instrument panel

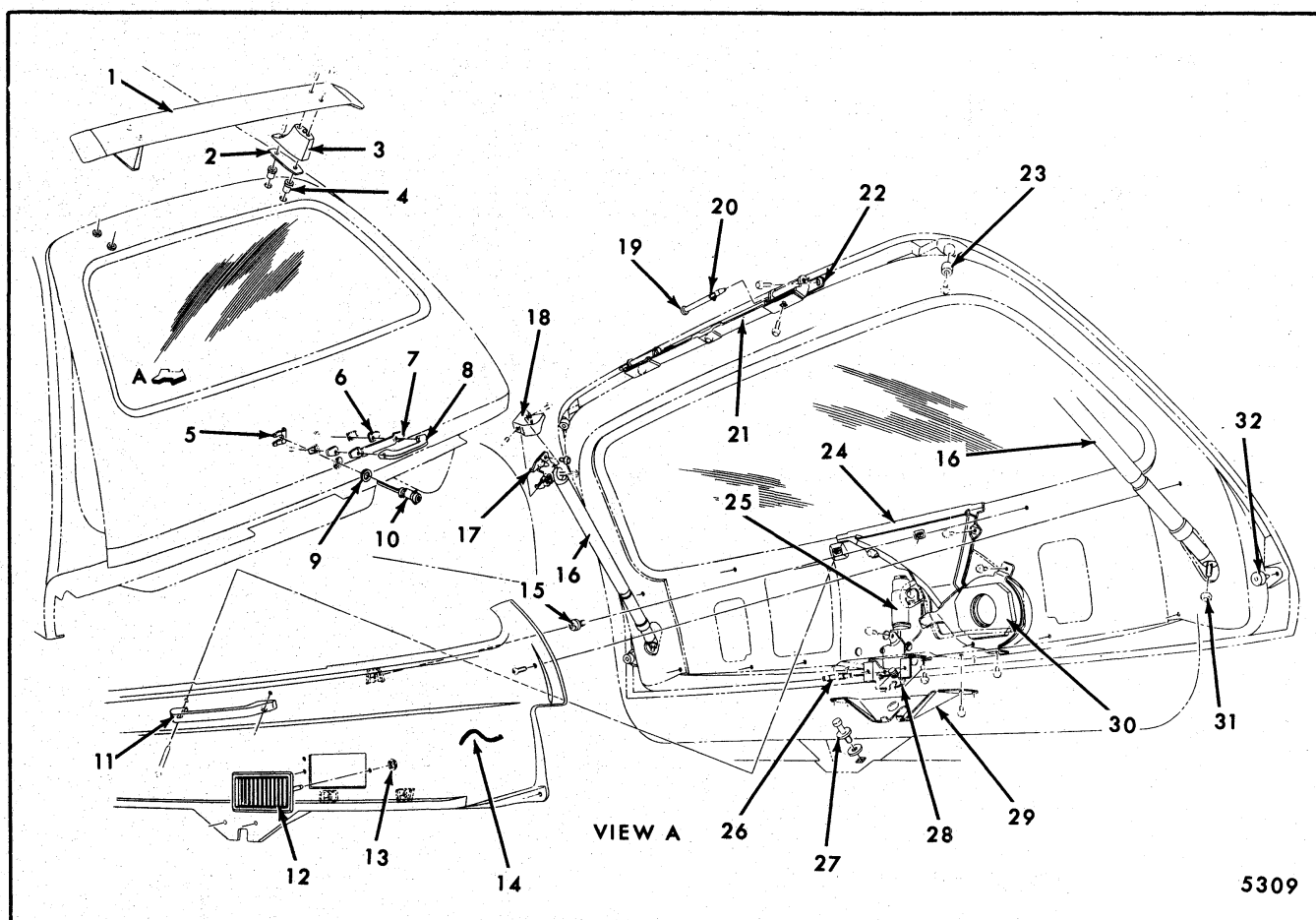


Fig. 7-82-Tailgate Hardware

- | | | | |
|---|-------------------------------------|------------------------------|------------------------------|
| 1. Wind Deflector | 9. Lock Cylinder Gasket | 20. Hinge Pin Retaining Ring | 26. Warning Lamp Jamb Switch |
| 2. Deflector Support Gasket | 10. Lock Cylinder | 21. Body Side Hinge Strap | 27. Lock Striker |
| 3. Wind Deflector Support | 11. Inside Pull Handle | 22. Gate Side Hinge Strap | 28. Lock Assembly |
| 4. Deflector Anchor Nut | 12. Defogger Grille | 23. Upper Corner Bumper | 29. Lock Assembly Cover |
| 5. Lock Cylinder Retainer | 13. Grille Nut | 24. Defogger Duct Assembly | 30. Defogger Blower |
| 6. Handle Gasket | 14. Inner Cover Panel | 25. Lock Release Solenoid | 31. Torque-Tight Nut |
| 7. Handle Excutechon - Transfer Option Only | 15. Fastener | | 32. Lower Corner Bumper |
| 8. Tailgate Outside Handle | 16. Counterbalance Support Assembly | | |
| | 17. Pillar Anchor Plate | | |
| | 18. Upper Support Assembly Cover | | |
| | 19. Hinge Pin | | |

mounted UNLOCK button which functions only with the ignition switch in the "Run" position and the transmission in "Park" or "Neutral" ("Park" only on some models) is standard on three seat models and optional on two seat models. Once unlocked, the gate can be raised from the rear of the vehicle. On Chevrolet styles with manual transmissions, the emergency brake must be engaged before the dash mounted unlock switch can be activated.

Tubular counterbalance support assemblies attached to the sides of the tailgate provide both a opening assist and "hold-open" feature. An instrument panel warning lamp will be illuminated if the gate is not fully closed and the ignition switch "ON".

BACK BODY OPENING WEATHERSTRIP

Description

A one-piece weatherstrip seals the tailgate along both sides and across the top of the back body opening. At the top of the opening, the weatherstrip is cemented into a weld-on retainer. Nylon fasteners are a component part of the weatherstrip and secure the weatherstrip along the sides of the opening by engaging piercings in the back body pillar. Serrations on the fasteners retain the fastener into the piercings and seal the openings from water entry. In addition, a bead of weatherstrip cement is applied between the outboard surface of the weatherstrip and the vertical wall of the back body pillar along each side of the back body opening, as well as beneath the lower end of the weatherstrip (Fig. 7-83).

To disengage nylon fasteners from the back body pillar piercings, use tool J-21104 or equivalent. This tool permits removal of the weatherstrip without fastener damage so that the weatherstrip can be reinstalled. Although replacement weatherstrip will include fasteners, individual fasteners are available as service parts.

Removal

1. Use a flat-bladed tool to break cement bond between pillar and weatherstrip along sides of back body opening.

NOTE: Kent Products "Special Release Agent" or equivalent may be used to loosen and/or dissolve weatherstrip cement.

2. Disengage fasteners from pillar using tool J-21104 or equivalent.

3. Carefully peel weatherstrip from pillar beginning at lower corner toward retainer at upper radius and repeat on opposite side.

NOTE: Use a flat-bladed tool to break bond of any remaining cement while peeling weatherstrip from opening. (See Note above.)

4. Peel weatherstrip from retainer along top of opening using a flat-bladed tool to separate cement bond between weatherstrip and retainer.

Installation

1. If previously removed weatherstrip is to be reinstalled, inspect nylon fasteners and replace those that are damaged and remove old cement.
2. Remove old weatherstrip cement from retainer and back body pillar.
3. Apply weatherstrip cement to base of retainer at top of opening.
4. Locate upper weatherstrip fasteners (each side) to uppermost piercings and insert weatherstrip into retainer as shown in Figure 7-83.
5. Continue inserting fasteners into pierced holes down both back body pillars.

NOTE: If required, tap nylon fasteners into piercings with a hammer and blunt caulking tool.

6. Apply cement to lower end of weatherstrip and secure by driving one loose nylon fastener (repeat at opposite side).
7. Flow a bead of weatherstrip cement between the outboard surface of the weatherstrip and vertical wall of the back body pillar along each side.

NOTE: Although weatherstrip cement is specified at certain locations, it can be used at any point where additional retention or sealing is required. For example, if weatherstrip becomes damaged at fastener location and will not retain fastener, discard fastener and secure weatherstrip to pillar with cement.

TAILGATE LOWER WEATHERSTRIP

Description

The lower section of the back body opening is sealed by the tailgate lower weatherstrip. The seal is formed by compressing the weatherstrip to the rear end panel and to the "ramped" surface of the back body

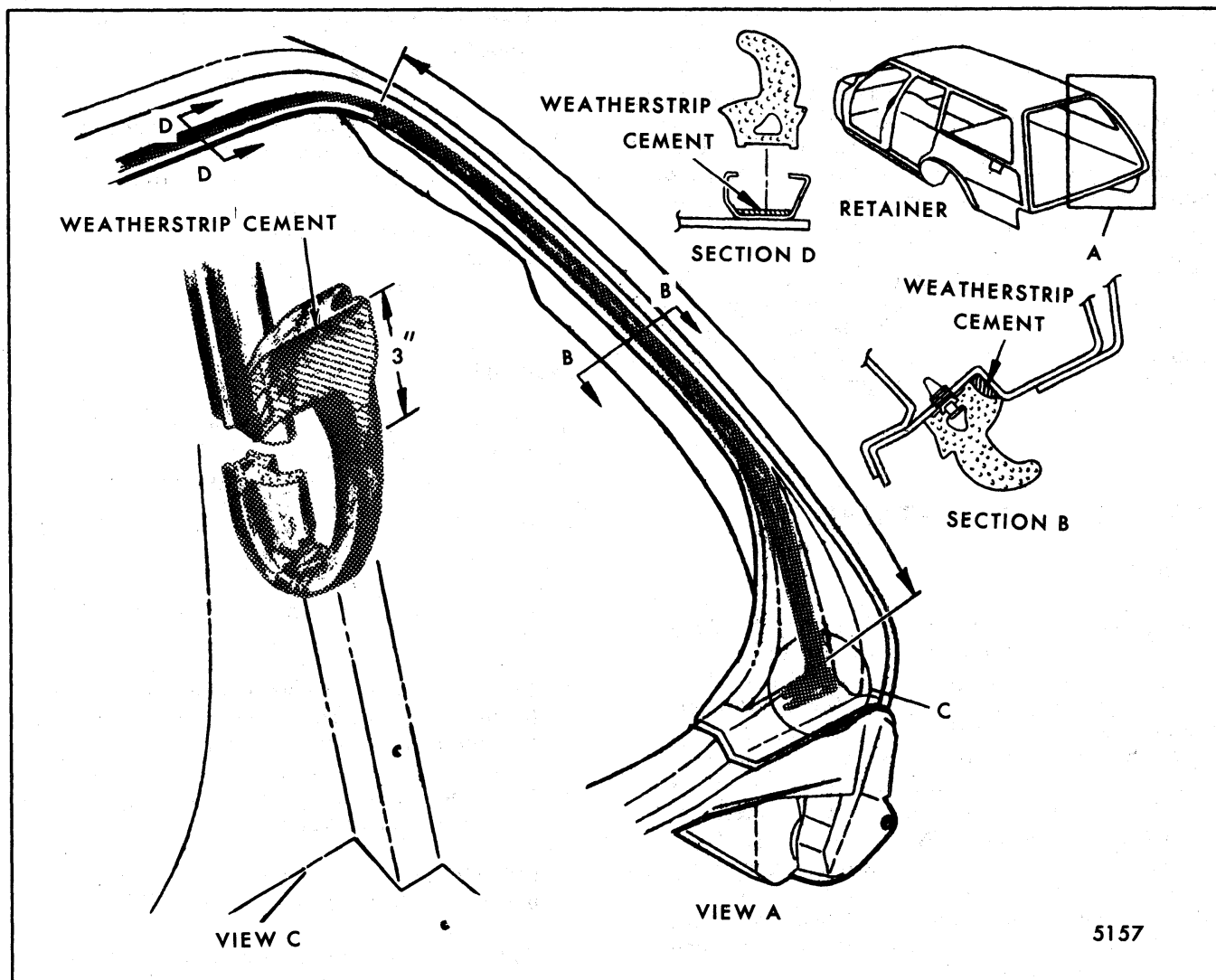


Fig. 7-83-Back Body Opening Weatherstrip Installation

opening weatherstrip end details by the closing action of the tailgate. Serrated nylon fasteners are a component part of the weatherstrip and are used to secure it to the lower section of the tailgate (Fig. 7-84).

Removal and Installation

1. Using tool J-21104 or equivalent, disengage fasteners from tailgate piercings and remove weatherstrip.
2. To install, align weatherstrip (sealing lip rearward - Section A-A, Fig. 7-84) fasteners to piercings in tailgate panel and press into position.

NOTE: If weatherstrip becomes damaged at fastener location and will not retain fastener, discard fastener and secure weatherstrip to tailgate with cement.

BACK BODY OPENING FINISHING STRIP

Description

The back body opening finishing strip is constructed of a black rubber like material. The strip is secured to the rear edge of the quarter panel adjacent to the tailgate. It follows the upper radius of the back body opening, down along the outboard edge of the tailgate to the rear end panel. It serves to close out the gap that is required between the sides of the tailgate and the quarter panel. Since roof to tailgate gap is minimal, no finishing strip is required across the top of the opening. The finishing strip is designed so as to conceal the screws used in attaching it to the quarter panel (Fig. 7-85).

Removal and Installation

1. Lift outer lip of finishing strip to expose attach-

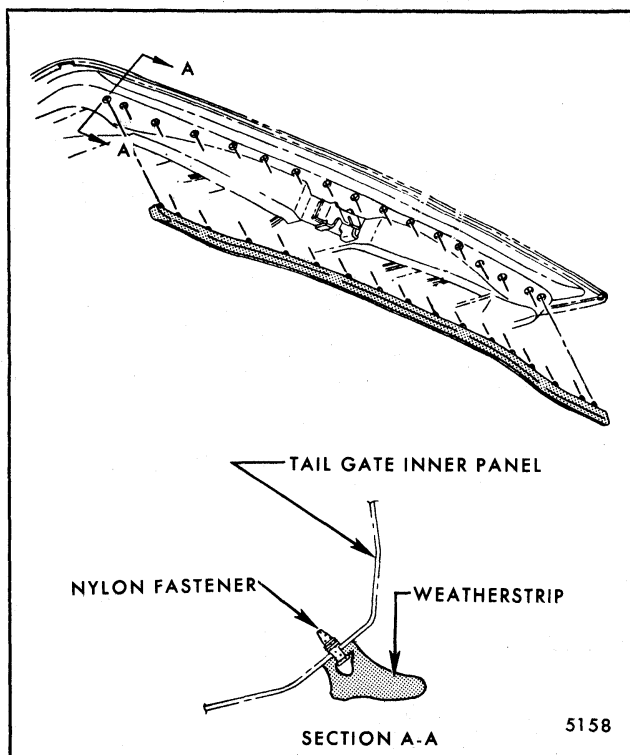


Fig. 7-84-Tailgate Lower Weatherstrip Installation

ing screws and remove. Repeat on opposite side if required.

2. To install, reverse removal procedure.

NOTE: Begin installation at round hole near top of finishing strip.

TAILGATE WINDOW GARNISH MOLDING

Description

A one piece plastic garnish molding is used around the tail gate window opening above the belt line (Fig. 7-86). It is secured to the tailgate inner panel with exposed screws. It is designed to conceal the tailgate window pinchweld and "finish" the area immediately adjacent to the glass.

Removal and Installation

1. Remove screws securing garnish molding to inner panel and remove.
2. To install, position garnish molding to overlap upper ends of tailgate inner cover panel and drive one upper screw to hold molding.
3. Finish by driving remaining screws.

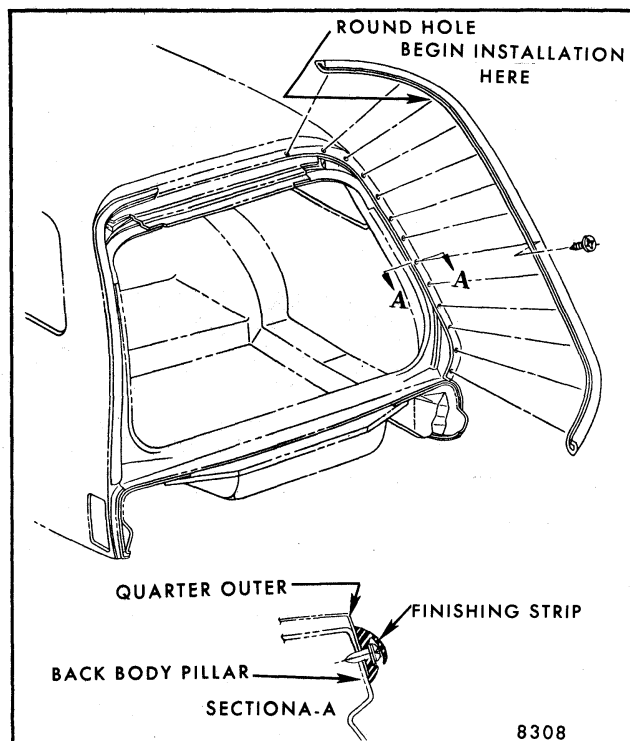


Fig. 7-85-Back Body Opening Finishing Strip

TAILGATE INNER COVER PANEL

Description

The tailgate inner cover panel is used to conceal the lower tailgate window pinchweld flange and to finish the lower half of the tailgate inner panel. It is secured to the inner panel by a series of "push-on" fasteners and exposed screws. An inside pull handle is mounted at tailgate centerline just below the tailgate window opening (Fig. 7-86).

Removal and Installation

1. Remove screws securing inside pull handle to tailgate inner panel and remove handle (Section C-C, Fig. 7-86).
2. Remove screws from inner cover panel at out-board corners and at lock reinforcement (bottom center of tailgate). Also lower attaching screws on garnish molding if not previously removed.
3. Using trim pad remover tool J-9886 or equivalent, disengage cover panel "push-on" fasteners from inner panel along bottom edge of cover panel (Section D-D, Fig. 7-86).
4. Grasp cover panel along the sides and lift upwards (telescoping upper cover panel corners

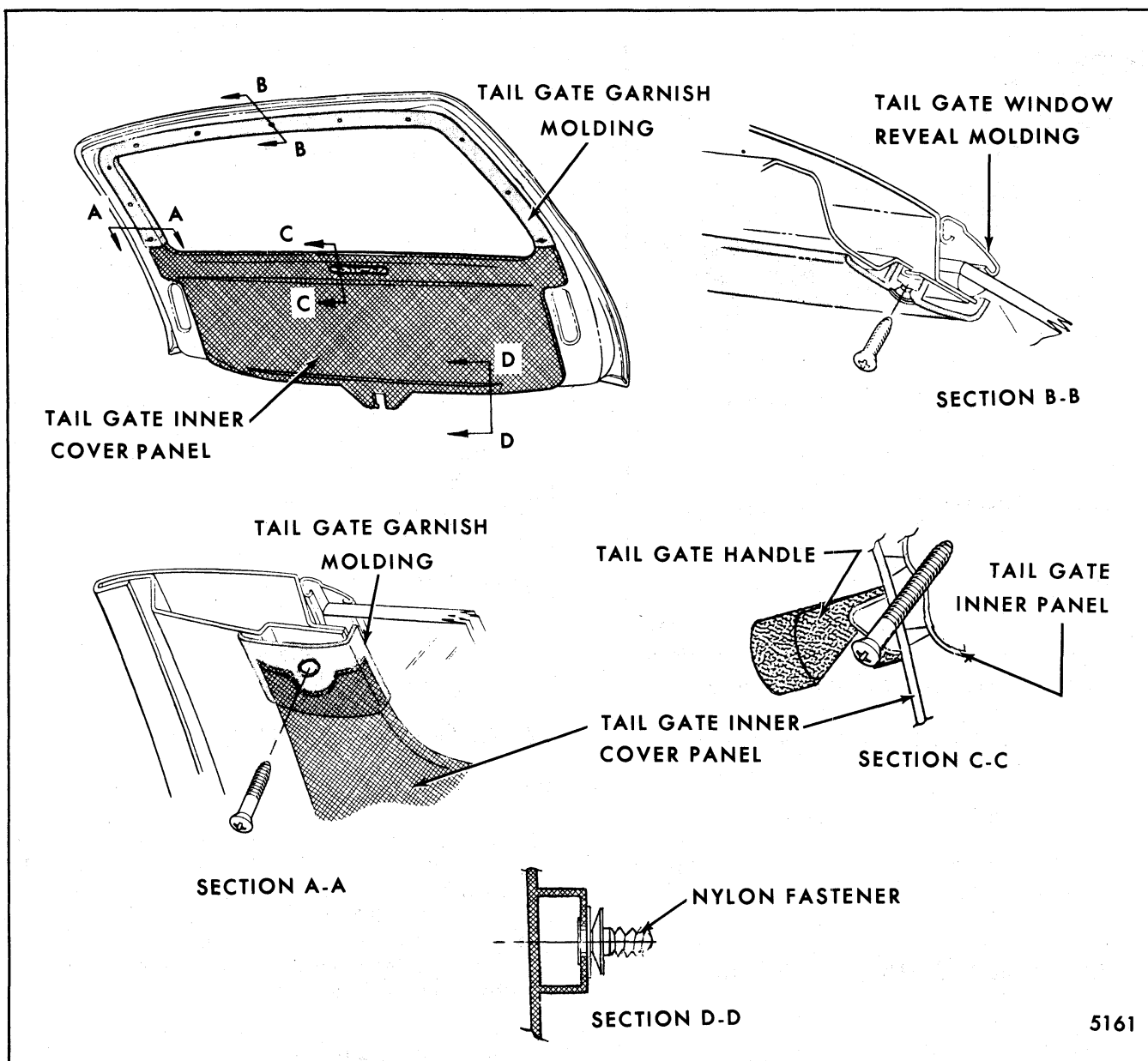


Fig. 7-86-Tailgate Inner Cover Panel and Tailgate Window Garnish Molding

beneath lower ends of garnish molding) until cover panel becomes disengaged from upper fasteners just below window opening.

5. Hold cover panel away from tailgate inner panel and pull downward to remove from beneath garnish molding.
6. To install, reverse removal procedure.

NOTE: Remove clips from inner panel holes and replace in cover. Snap cover on with clips in place, locate cover and drive screws to replace.

TAILGATE LOCK COVER

Description

The tailgate lock cover is secured by screws to the bottom of the tailgate (Fig. 7-87). Its function is to conceal and protect the tailgate lock mechanism and warning light jamb switch from accidental abuse.

Removal and Installation

1. Remove screws securing lock cover to underside of tailgate and remove cover.

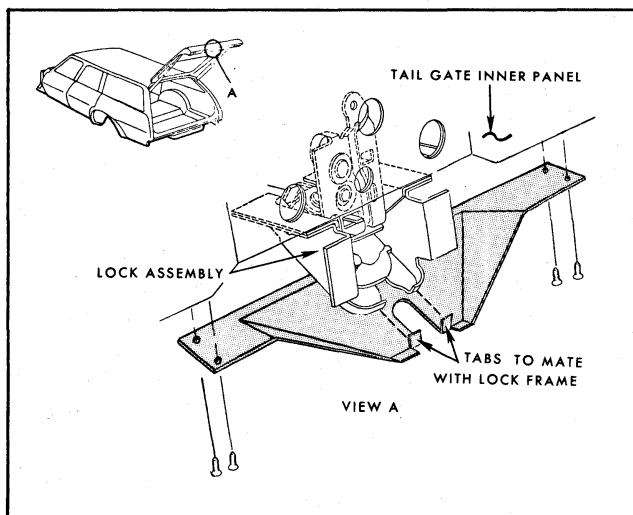


Fig. 7-87-Tailgate Lock Cover

2. To install cover, reverse removal procedure making sure switch insulator is in place to prevent grounding against cover.

TAILGATE OUTSIDE PULL HANDLE

Description

A zinc die cast outside pull handle is mounted on the tailgate outer panel near the bottom center of the gate (Fig. 7-88). Its function is to afford a means of lifting the gate from the "unlocked" position (gate partially opened) to a point where the counterbalance support tubes can complete the opening cycle

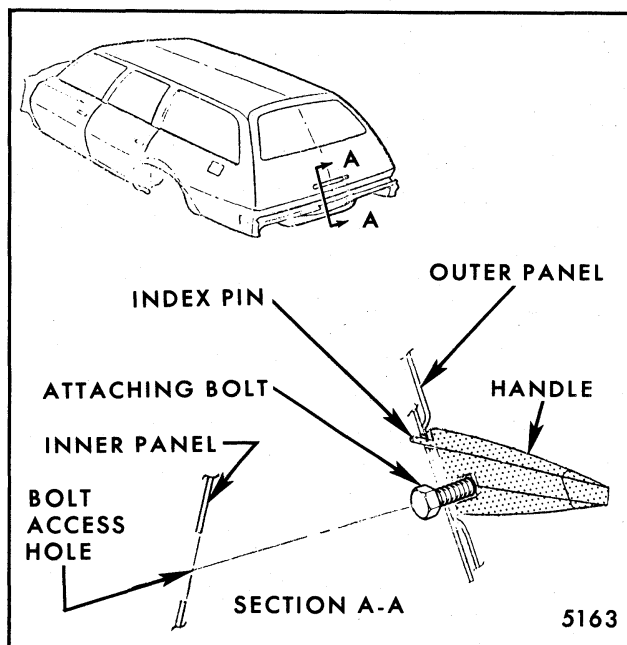


Fig. 7-88-Tailgate Outside Handle

unassisted. Small indexing studs which are an integral part of the handle insure correct installation.

Removal and Installation

1. Remove tailgate inner cover panel as previously described.
2. Reaching through inner panel access hole, remove bolts securing handle to outer panel and remove.
3. To install, reverse removal procedure.

NOTE: Align escutcheon (wood grain transfer only) or gaskets with indexing studs and outer panel prior to driving bolts that secure handle.

TAILGATE LOCK CYLINDER

Description

The tailgate lock cylinder is mounted on the tailgate outer panel between the outside handle and the bottom of the gate. It is secured to the outer panel by a side loading slide-on retainer, inboard of the outer panel. The lock is actuated by the round key (Fig. 7-89).

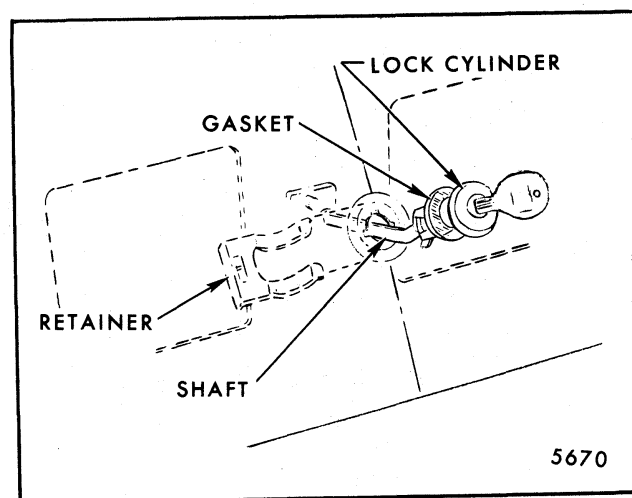


Fig. 7-89-Tailgate Lock Cylinder

Removal and Installation

1. Remove tailgate inner cover panel as previously described.
2. Reaching through large inner panel access hole, disengage retainer and remove lock cylinder.
3. To install, reverse removal procedure.

TAILGATE LOCK RELEASE SOLENOID ASSEMBLY

Description

An electric tailgate lock release solenoid is designed to permit unlocking of tailgate from a switch on the instrument panel. The switch that activates the solenoid will function only with the ignition switch in the "Run" position and the transmission in "Park" or "Neutral" ("Park" only on some models). The solenoid is bolted to the outboard surface of the tailgate inner panel and lock at two locations. It also incorporates an indexing tab which mates with a slot in the lock assembly. Unlock force of the solenoid is transferred to the lock by means of a steel cable. This cable connects the solenoid plunger to a "shank and ball" fitting which engages into a wedge slot on the lock release lever (Fig. 7-90).

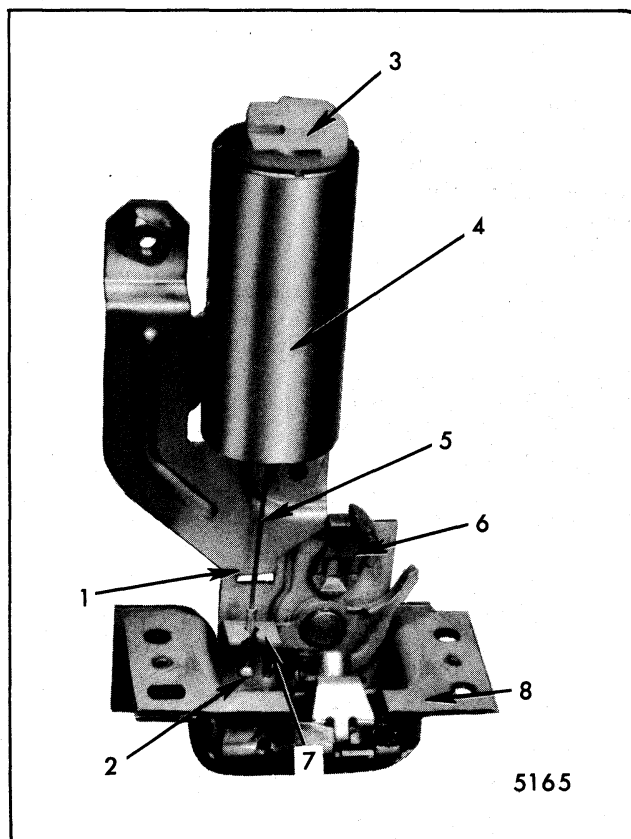


Fig. 7-90-Tailgate Lock and Lock Release Solenoid

- | | |
|------------------------------------|----------------------------------|
| 1. Solenoid Index Tab | 6. Lock Cylinder Release Cam |
| 2. Solenoid Shank and Ball Fitting | 7. Lock Release Lever Wedge Slot |
| 3. Feed Wire Connector | 8. Lock Assembly |
| 4. Solenoid Assembly | |
| 5. Actuating Cable | |

Removal and Installation

1. Remove inner cover panel as previously described.
2. Reach through large inner panel access hole and hold solenoid assembly while removing bolts that secure it to the inner panel.
3. Rotate key in tailgate lock cylinder to "unlock" position and hold until solenoid is removed.

NOTE: This action will hold lock release lever to the uppermost position aiding solenoid removal and installation.

4. Move solenoid assembly rearward to disengage indexing tab from lock assembly.
5. Lower solenoid assembly until "shank and ball" fitting is lower than wedge slot in lock release lever.
6. Move solenoid assembly toward outer panel to disengage cable from release lever wedge slot and withdraw solenoid from tailgate.
7. Release lock cylinder key and allow it to return to neutral position.
8. Disconnect solenoid feed wire from solenoid.
9. To install, reverse removal procedure.

TAILGATE LOCK ASSEMBLY

Description

The tailgate utilizes a fork bolt lock design which includes a secondary lock feature. The gate is secured in a closed position when the lock fork bolt snaps over and engages a striker bolt which is mounted to the bottom of the back body opening. The lock is unlocked by the round key at the lock cylinder on the tailgate outer panel or optionally by means of an electrically operated solenoid (Fig. 7-90).

CAUTION: Do not attempt repairs to correct lock discrepancies. Make corrections through replacement of lock assembly.

Removal and Installation

1. Remove screw retained lock cover from bottom of tailgate.
2. Disconnect wire harness terminal from warning light jamb switch on lock assembly (Fig. 7-91).

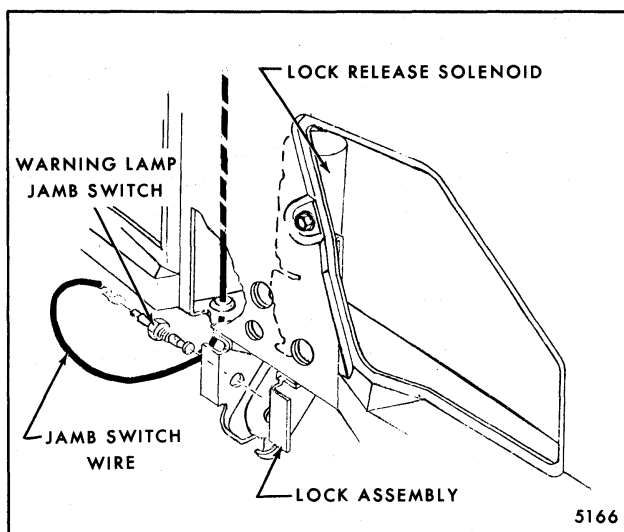


Fig. 7-91-Tailgate Warning Lamp Jamb Switch

3. Remove two inner cover panel screws from lock assembly tabs (Fig. 7-86).

NOTE: If equipped with electric solenoid lock release option, it will be necessary to complete inner cover panel removal and solenoid removal.

4. Remove four bolts securing lock assembly to bottom of tailgate.
5. Withdraw lock assembly from bottom of tailgate while disengaging lock cylinder actuating rod from lock.

NOTE: Actuate lock cylinder with key to aid lock removal.

6. To install, reverse removal procedure.

NOTE: If lock assembly is to be replaced, install new warning lamp jamb switch.

TAILGATE WARNING LIGHT JAMB SWITCH

Description

A grounding type jamb switch is mounted to the tailgate lock assembly. Its function is to complete an electrical circuit for the instrument panel warning light when the tailgate lock is in any position other than fully locked (primary lock position) provided the ignition is "ON" (Fig. 7-91).

Removal and Installation

1. Remove tailgate lock cover from bottom of gate.

2. Disconnect wire harness terminal from jamb switch.
3. Remove jamb switch and retaining nut assembly.
4. To install, reverse removal procedure making sure switch is insulated from lock cover.

NOTE: Lock assembly must be unlocked when installing new jamb switch. Torque required to properly seat jamb switch is 9 to 15 foot-pounds. Adjustment is accomplished automatically when tailgate is fully locked.

TAILGATE LOCK STRIKER

Description

The lock striker consists of a single metal bolt and washer assembly that is threaded into a tapped, floating cage plate located in the center of the rear cross bar at the bottom of the back body opening (Fig. 7-92). Also it permits fore-aft and lateral adjustment of the bottom of the tailgate.

Removal and Installation

1. Mark position of striker on rear cross bar.

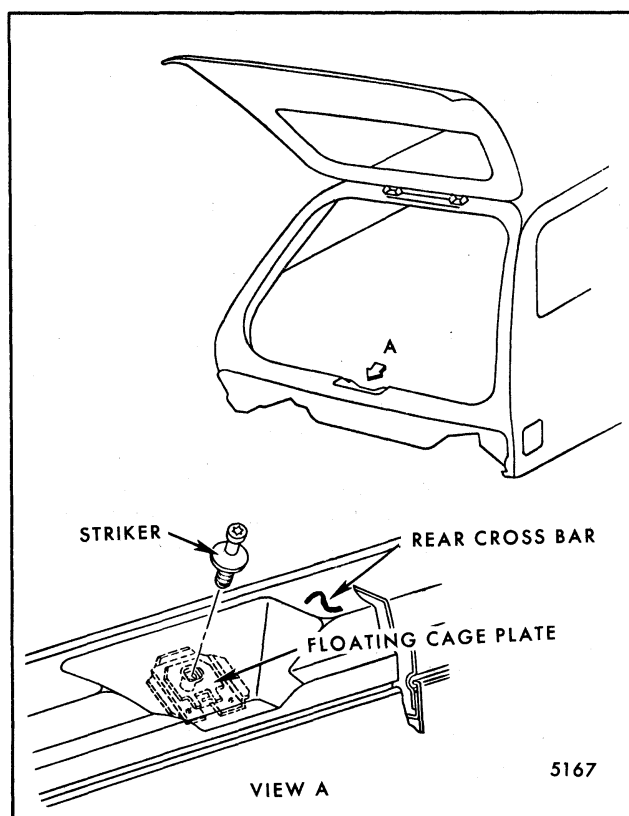


Fig. 7-92-Tailgate Lock Striker

2. Insert tool J-23457 or equivalent, into the star shaped tool recess in the head of the striker bolt and remove striker.
3. To install, reverse removal procedure. Make certain striker is positioned within mark. If striker is repositioned, touch-up exposed unpainted surface on rear cross bar adjacent to striker assembly. Torque striker bolt to 34 to 46 foot-pounds.

Adjustment

The following steps are performed with counterbalance support assembly and tailgate inner cover panel removed. However, if either counterbalance support assembly or inner cover panel is installed, refer to "Fore-Aft and Lateral Adjustment-Bottom of Tailgate" near the end of this section.

1. Close tailgate to fully locked position.
2. Using striker tool J-23457 or equivalent, loosen striker while inside of vehicle.
3. Have assistant position tailgate into proper alignment from outside of vehicle.

NOTE: Striker must be centered in lock frame.

4. Torque striker 34 to 46 foot-pounds.
5. Paint touch-up body facing around perimeter of striker bolt as required.

TAILGATE WINDOW DEFOGGER

Description - Blower Type

A blower type defogger motor is mounted on the tailgate inner panel and concealed by an inner cover panel designed for this option. Air is drawn into the blower from the passenger compartment by way of a grille which is secured to the inner cover panel. Air exhausted from the blower is forced into a duct which directs the flow of air onto the glass. Control switch for the defogger blower is located on the instrument panel.

Removal and Installation

1. Remove inner handle and inner cover panel as previously described.

NOTE: To separate grille from inner cover panel, pry push-on retainers from grille studs (Fig. 7-93).

2. Remove screws securing defogger duct assembly to inner panel at beltline and disengage duct from blower outlet nozzle to remove duct assembly.
3. Remove screws securing blower to inner panel (lower screw accessible from bottom of tailgate) and lift from inner panel access hole and disengage wire harness connector (Fig. 7-93).
4. To install, reverse removal procedure.

NOTE: Locate ground wire eyelet beneath one blower motor attaching screw.

Description - Grid Type

A heated grid type defogger tailgate glass is available on some styles. It consists of a number of element lines and two vertical bus bars baked into the inside surface of a tinted tailgate glass. The ground wire lead is secured by a screw to the inner panel just below the lower right corner of the glass opening. The feed wire connector is clipped to the inner panel near the center of the gate below the glass opening. Both leads are concealed by the inner cover panel.

Refer to the General Information Section for glass removal and installation.

TAILGATE ASSEMBLY

Description

The tailgate is constructed of an inner and outer panel welded together to form an assembly. The upper half of the gate consists primarily of an adhesive retained stationary glass. Bolt-on hinges are mounted along the upper edge of the gate with a lock at the bottom (Fig. 7-94). Tubular counterbalance support assemblies are mounted to the gate and provide opening assist.

Removal

1. Remove screw retained back body opening upper finishing molding (Fig. 7-95).
2. Disconnect ground cable from battery.
3. Peel tape from tailgate harness between bend-over tabs and cut wire(s) that lead into tailgate. One, two or three color coded wires may be found inside of taped loom depending on optional equipment.

NOTE: Stagger cuts as shown in Figure 7-96 in order to prevent bulging of harness when wires are rejoined.

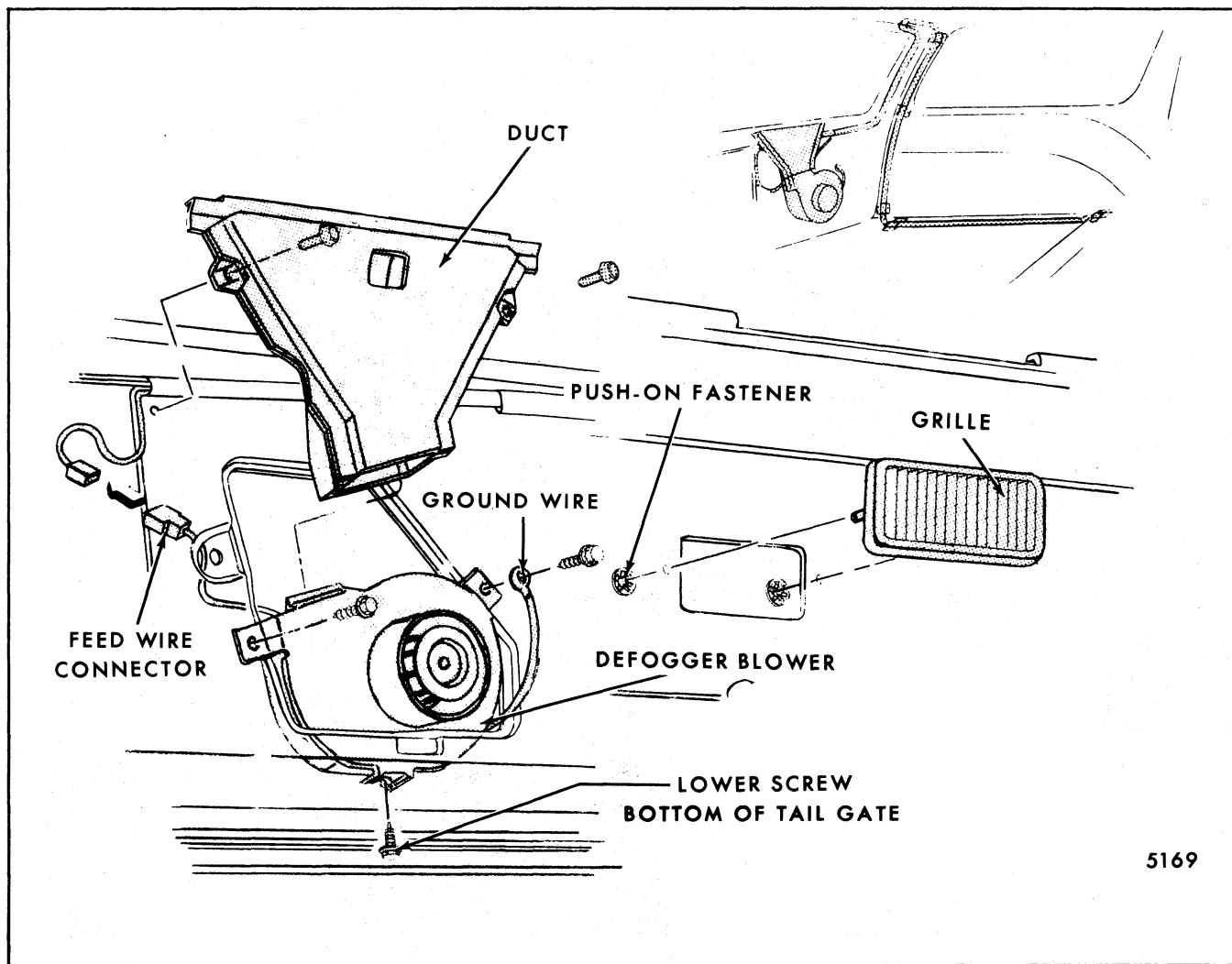


Fig. 7-93-Tailgate Window Defogger Installation

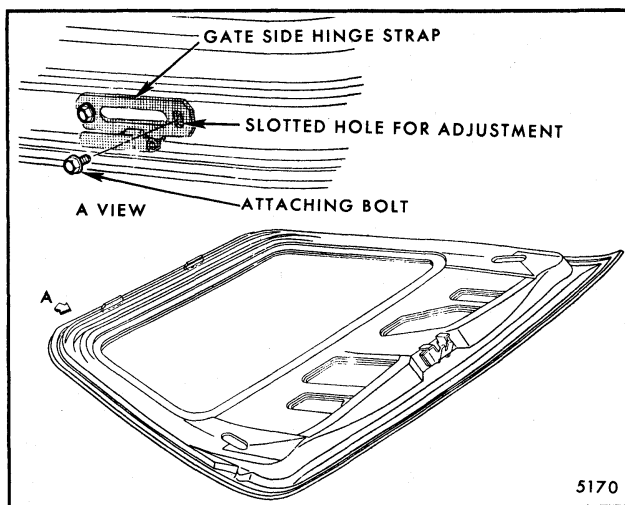


Fig. 7-94-Tailgate Hinge Assembly

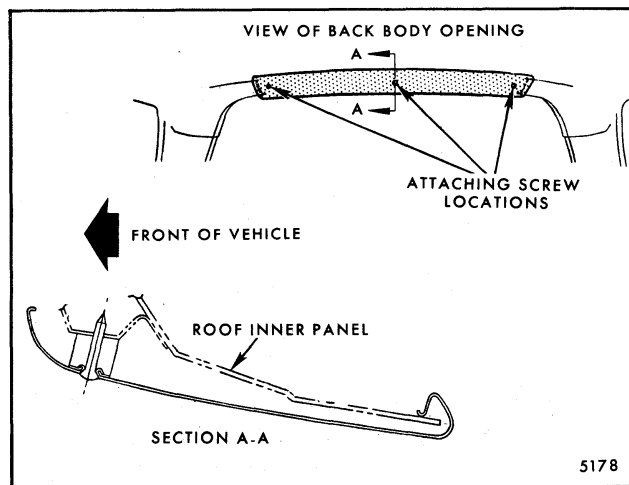


Fig. 7-95-Back Body Opening Upper Finishing Molding

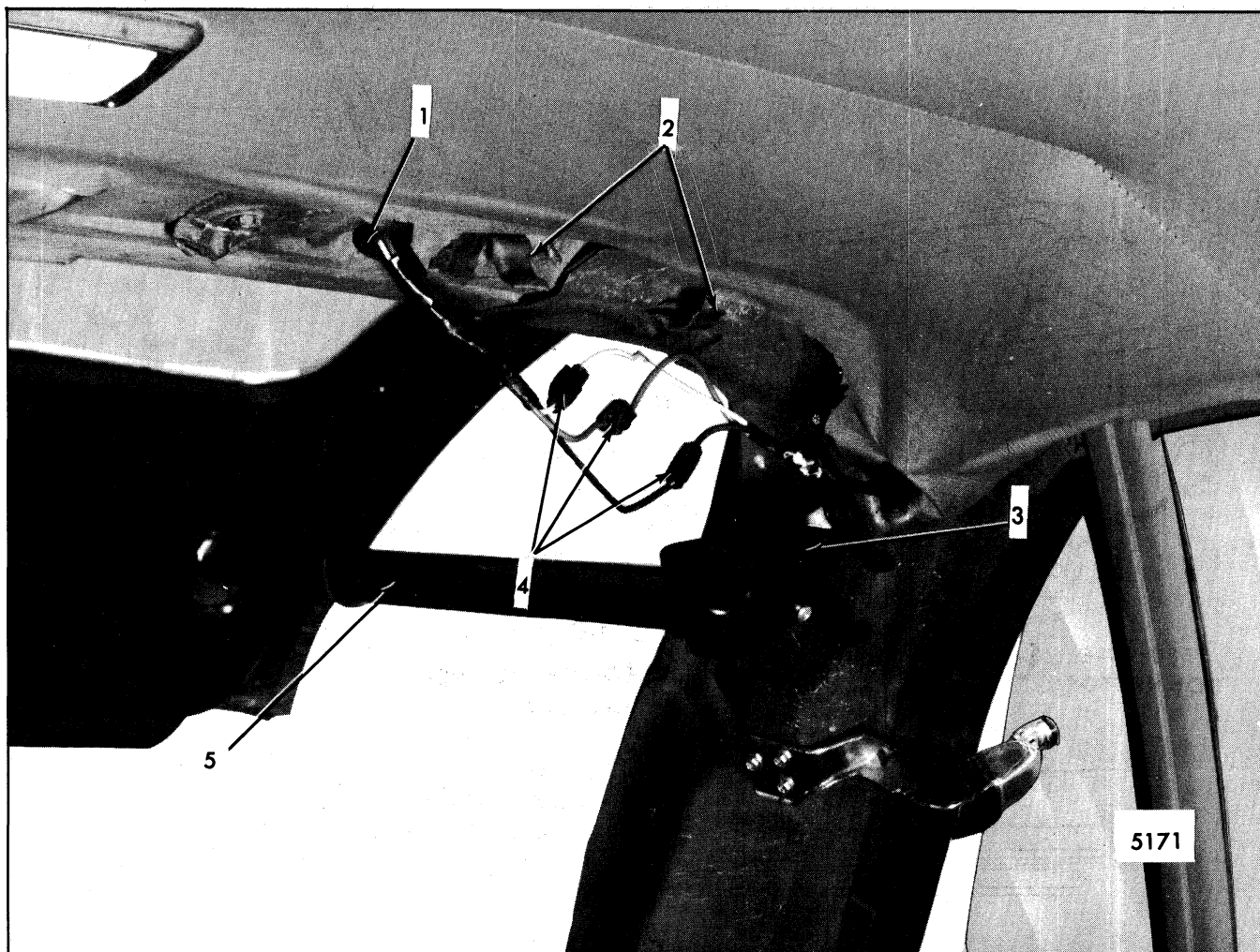


Fig. 7-96-Cut and Splice Tailgate Harness

- | | |
|--|--|
| <ul style="list-style-type: none"> 1. Sealing Grommet 2. Weld-On Clips 3. Counterbalance Support Assembly Pillar Anchor Plate | <ul style="list-style-type: none"> 4. "Scotchlok" Connectors, Taped Splice Joints or Equivalent 5. Counterbalance Support Assembly |
|--|--|
-
4. Remove screw from grommet and tube assembly clip at roof reinforcement.
 5. Disengage grommet from roof reinforcement, pull harness remnant through hole and tape to inner surface of tailgate.
 6. Place protective covering between upper edge of tailgate and roof panel.
 7. Perform following steps while helper(s) supports tailgate in full open position.
 8. Remove both gate-side counterbalance support assembly attaching nuts, disengage from gate and allow support to rest against base of back body opening.
 9. Use a 3/16" diameter rod, 18" long to remove hinge pins from hinge. As shown in Figure 7-97, place end of rod against pointed end of hinge pin; then, strike rod firmly to shear retaining clip tabs and drive pin through hinge. Repeat operation on opposite side hinge and remove tailgate from body.

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH TAILGATE IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

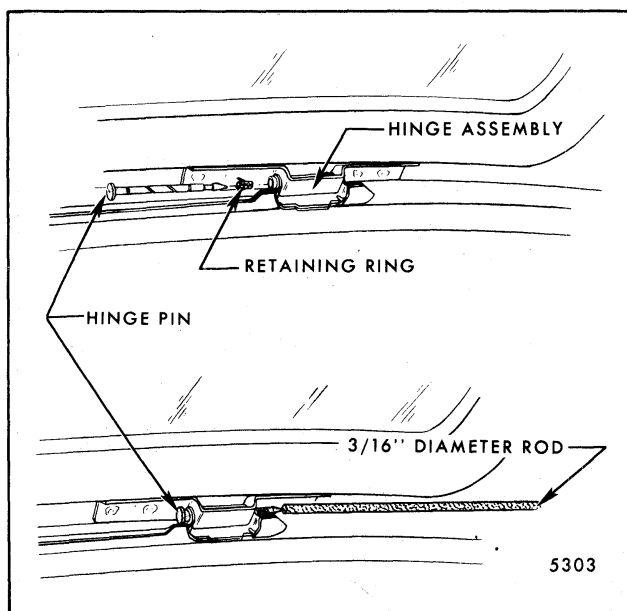


Fig. 7-97-Tailgate Hinge Pin Removal

Installation

1. Install new retaining rings onto notches provided in hinge pins. Position rings so that tabs point toward head of pin as shown in Figure 7-97.
2. Place protective covering between upper edge of tailgate and roof panel.
3. With the aid of helper(s), mate tailgate hinge with body side hinge and install hinge pins with pointed end of pin facing outboard.
4. With tailgate held fully open, position counterbalance support assembly onto gate side mounting stud and torque new retaining nut from 14 to 22 foot-pounds. Repeat operation for opposite side.

NOTE: Replace torque-tight nuts Part No. 9664875 or equivalent, when installing counterbalance support assembly. If not available, use previously removed attaching nuts after applying retaining adhesive, Loctite/75 Part No. 1051343 or equivalent, as directed on package.

5. Remove protective cover from roof panel.
6. Apply weatherstrip cement to grommet flange and seat into hole in roof reinforcement.
7. Secure grommet and tube assembly clip to roof reinforcement.
8. Splice tailgate harness wire(s) together or fasten

with "Scotchlok" connector or equivalent; tape securely and retain under weld-on bend over tabs.

NOTE: One, two or three color coded wires may be included in harness loom depending on optional equipment in tailgate.

9. Reconnect battery ground cable and check operation of circuits involved in wire splice.
10. Position back body opening upper finishing molding to roof and secure with screws.

TAILGATE COUNTERBALANCE SUPPORT ASSEMBLY

Description

The counterbalance support assembly is a spring loaded, telescoping tubular device that is utilized to assist tailgate opening effort. Two springs are securely retained into each unit. A heavy quick response spring is used on initial opening so that gate will clear the lock when the key or solenoid is actuated. The other spring is used to assist the tailgate through completion of the opening cycle.

A circular spring clip mounted near the center of the outer tube provides the hold-open feature. It is actuated when the counterbalance support assembly is fully extended (tailgate fully open) and overcome as the tailgate is pulled into the closing cycle. Up stop is provided within each assembly.

A snap-in, nylon type grommet is used at each counterbalance support assembly end. Special grommet composition eliminates need for lubrication.

No adjustment is provided in the counterbalance support assembly therefore, a high output assembly using heavier springs is available and used when optional equipment (lock solenoid, defogger, etc.) is specified. A standard output counterbalance support assembly is identified by a red nylon grommet while the high output assembly is identified by a yellow grommet. Both standard and high output supports are to be used in pairs.

WARNING: DO NOT ATTEMPT TO DISASSEMBLE COUNTERBALANCE SUPPORT ASSEMBLY UNDER ANY CIRCUMSTANCES BECAUSE THE SPRINGS CONTAINED THEREIN ARE ALWAYS UNDER COMPRESSION AND RELEASE OF SPRING MAY RESULT IN PERSONAL INJURY.

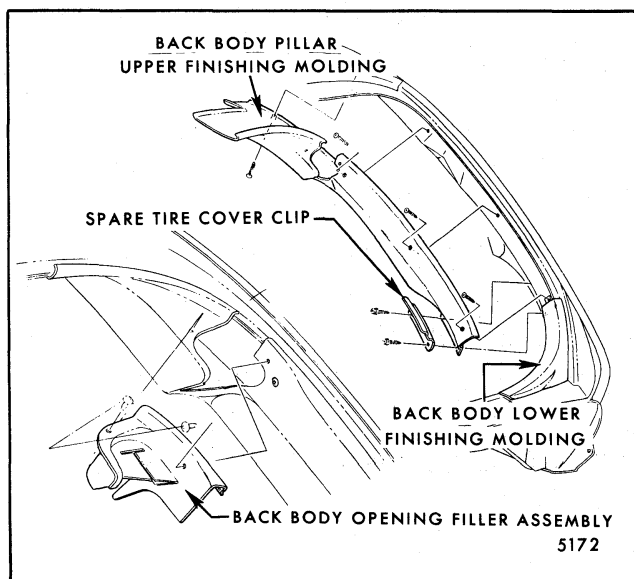


Fig. 7-98-Back Body Pillar Upper Finishing Molding - Right Side Shown

Removal and Installation

1. Remove back body opening filler assembly attaching screws and disengage filler assembly from back body pillar upper finishing molding (Fig. 7-98).
2. Remove screws securing back body pillar upper finishing molding and disengage pillar molding from back body pillar (Figs. 7-98 and 7-99).

NOTE: It may be necessary to loosen adjacent moldings to remove and/or install pillar molding.

3. Remove pillar anchor plate cover screws and slide cover from pillar and/or plate (Fig. 7-100).

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH TAILGATE IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

4. While helper supports gate in fully open position, remove counterbalance support assembly attaching nut and disengage from tailgate and pillar anchor plate (Fig. 7-100).
5. Refer to Figure 7-101 for disposal procedure.

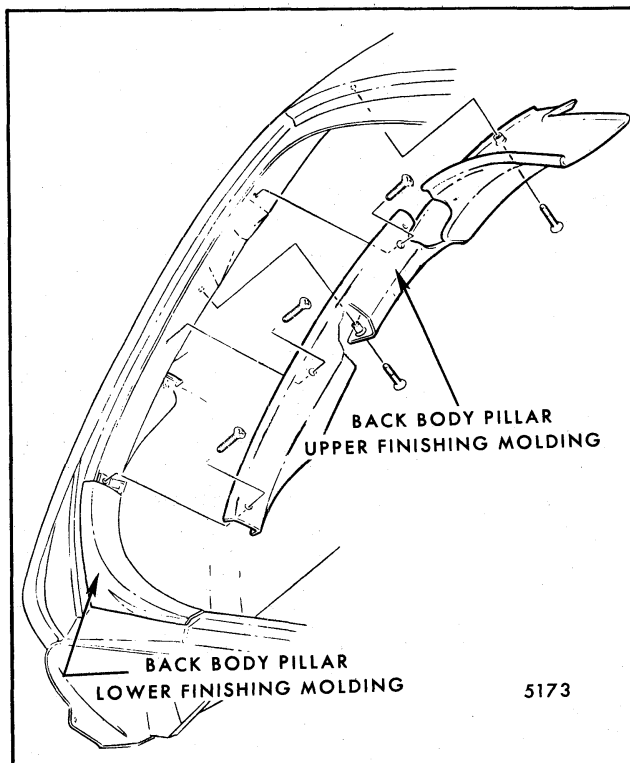


Fig. 7-99-Back Body Pillar Upper Finishing Molding - Left Side Shown

6. To install reverse removal procedure. Torque counterbalance support assembly attaching nuts from 14 to 22 foot-pounds.

NOTE: Replace torque-tight nuts Part No. 9664875 or equivalent, when installing counterbalance support assembly. If not available, use previously removed attaching nuts after applying retaining adhesive Loctite/75 Part No. 1051343 or equivalent as directed on package. Outer tube of counterbalance support assembly (black) is mounted to the back body pillar anchor plate.

COUNTERBALANCE SUPPORT ASSEMBLY PILLAR ANCHOR PLATE

Description

A shoulder bolt welded onto a bracket forms the anchor plate. The anchor plate is bolted to back body pillar near the roof at each side of the opening (View A, Fig. 7-100). A metal cover is secured by screws to the pillar anchor plate after the counterbalance support assembly is attached. The function of the anchor plate cover is to entrap the counterbalance support assembly if the anchor plate shoulder bolt shears or attaching torque-tight nut works loose (Fig. 7-100).

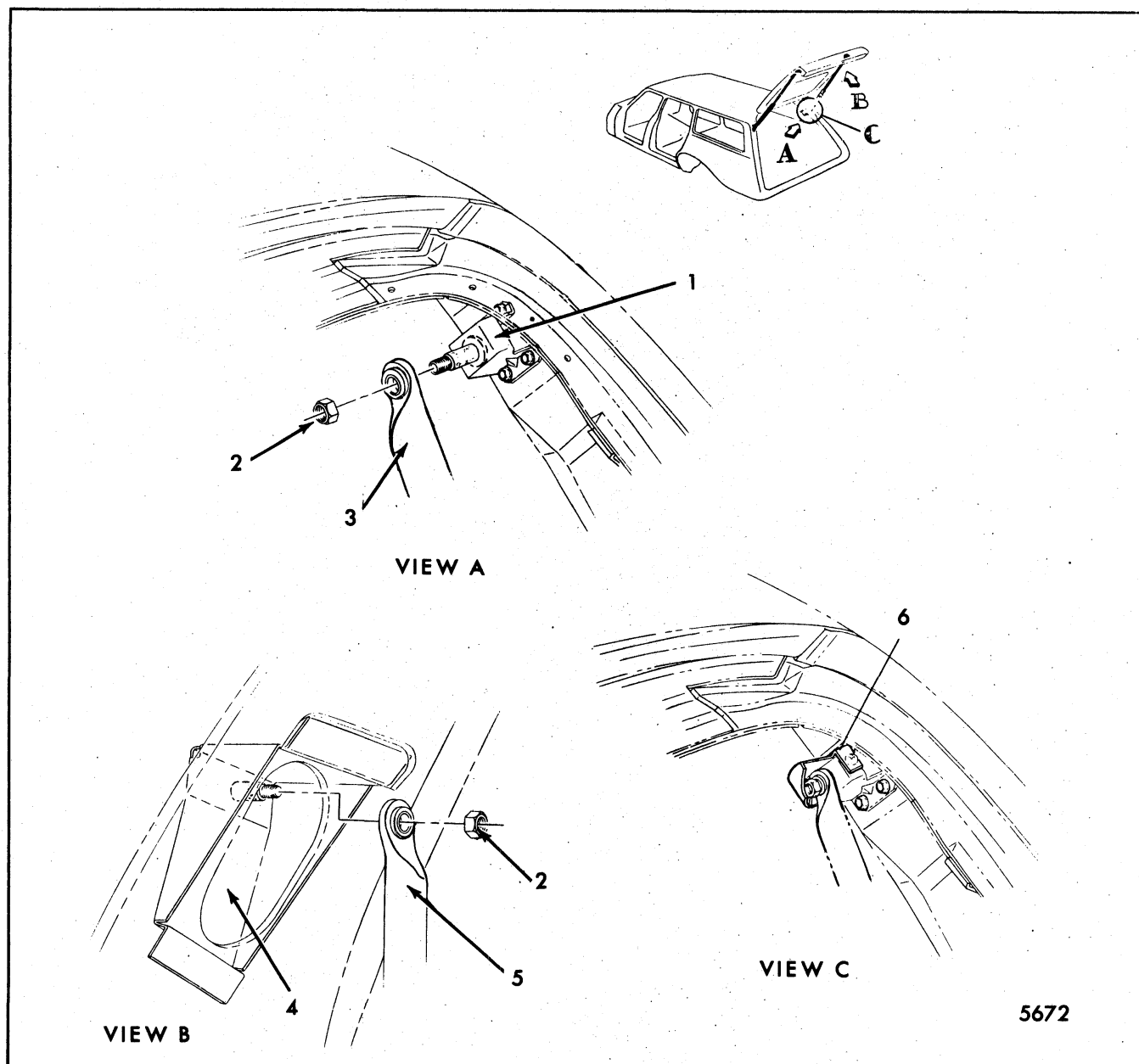


Fig. 7-100-Counterbalance Support Assembly Attachment

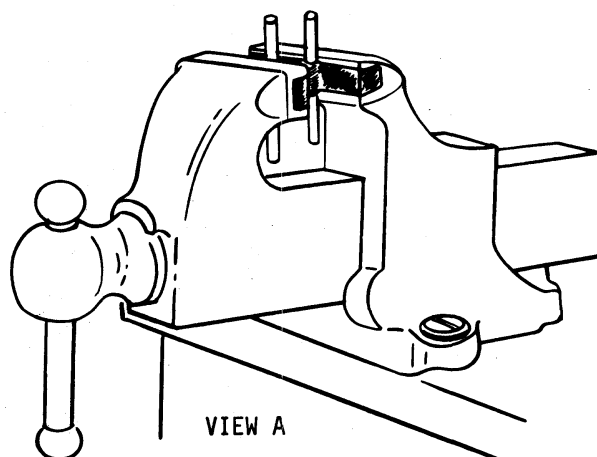
- | | | | |
|----------------------------------|--|--|--|
| 1. Back Body Pillar Anchor Plate | 3. Counterbalance Support Assembly - Large Diameter (Outer) Tube | 5. Counterbalance Support Assembly - Small Diameter (Inner) Tube | 6. Counterbalance Support Assembly Upper Cover |
| 2. Torque-Tight Nuts | 4. Tailgate Anchor Plate | | |

Removal and Installation

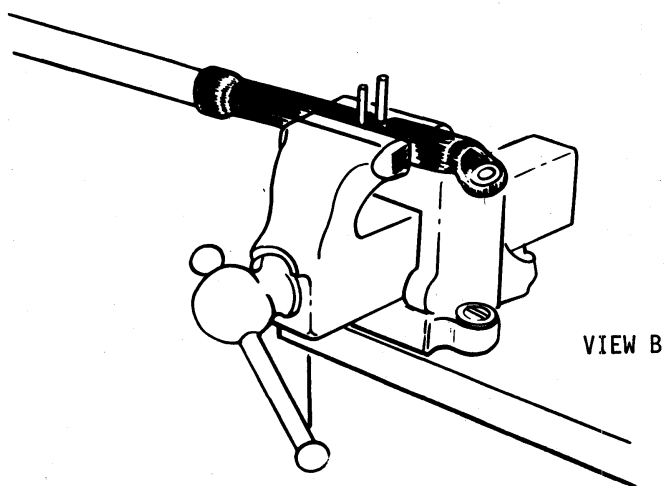
WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH TAILGATE IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

1. Remove tailgate counterbalance support assembly as previously described.
2. Remove bolts securing pillar anchor plate to back body pillar and remove. Anchor plate shim is secured with same bolts.
3. To install, reverse removal procedure.

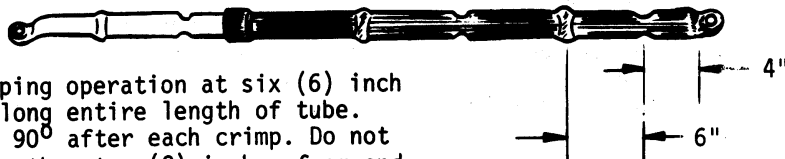
WARNING: DO NOT ATTEMPT TO DISASSEMBLE COUNTER-BALANCE SUPPORT ASSEMBLY UNDER ANY CIRCUMSTANCES BECAUSE THE SPRINGS CONTAINED THEREIN ARE UNDER COMPRESSION AND RELEASE OF SUCH A SPRING MAY RESULT IN PERSONAL INJURY.



1. Tape two (2) pieces of 1/4 inch diameter steel rod, approximately four (4) inches long, to the jaws of a bench vise (View A).



2. Starting at black end, place counterbalance support in vise and crimp approximately four (4) inches in from end (View B). Depth of each crimp should be approximately 1/4".



3. Repeat crimping operation at six (6) inch intervals along entire length of tube. Rotate tube 90° after each crimp. Do not crimp closer than two (2) inches from end.

4. Discard counterbalance support assembly.

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Fig. 7-101-Disposal Procedure for Replaced Counterbalance Support Assembly

TAILGATE HINGE ASSEMBLY

Description

The tailgate hinge assembly consists primarily of a bolt-on body side hinge strap and two bolt-on gate side hinge straps. Hinge pins are used to join the gate and body side hinge straps together (Figs. 7-102 and 7-94). Retaining clips are used to secure the hinge pins. The body side hinge strap is adjustable fore-aft and laterally. The gate-side hinge strap is adjustable up-down to accomplish flush fit at top of tailgate to roof panel.

Removal and Installation

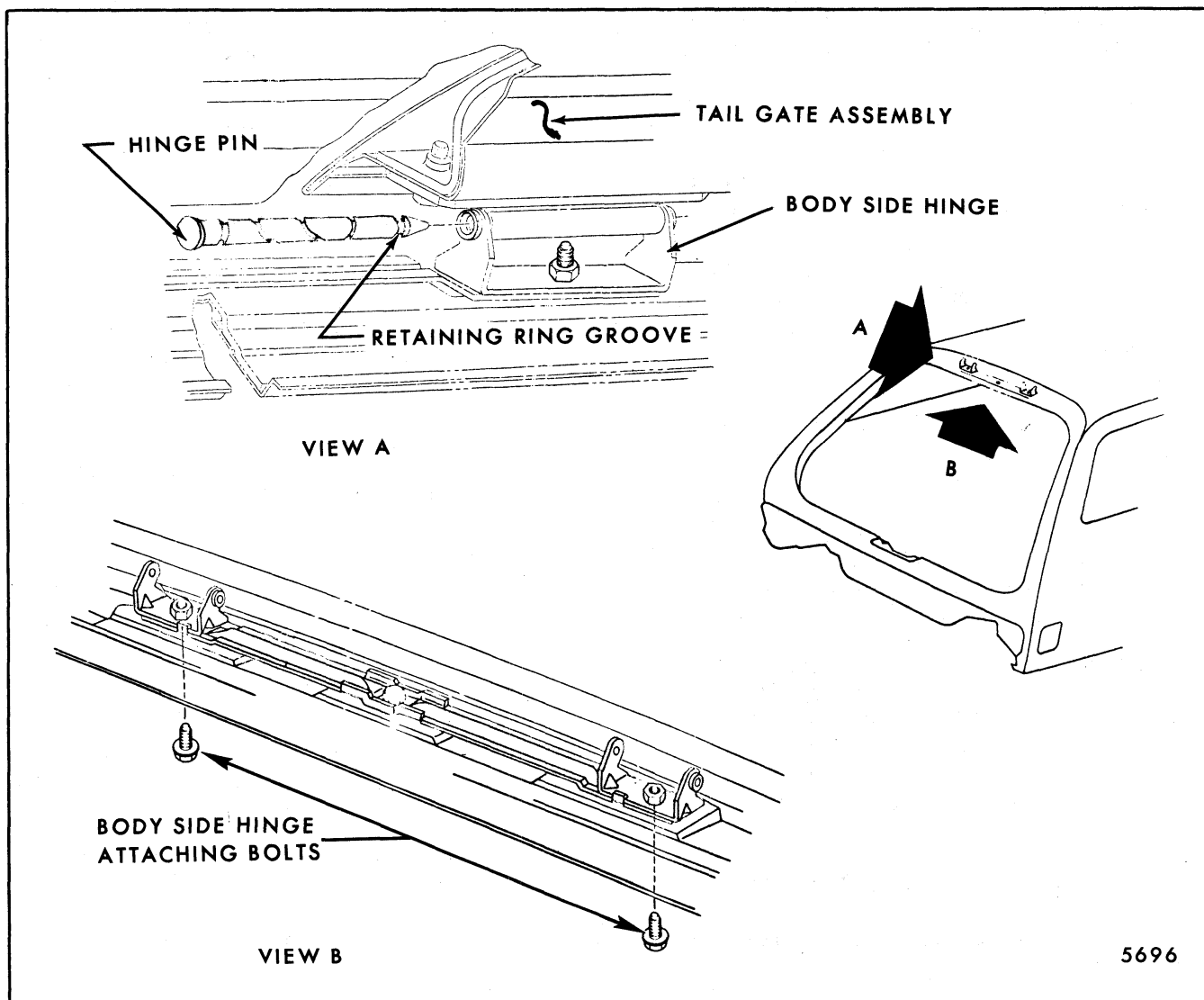
1. Remove tailgate as previously described. Gate side hinge is removed as a bench operation.

2. Mark location of hinge strap to aid installation.
3. Remove screw retained back body opening upper finishing molding - body side hinge strap only.
4. Remove hinge strap attaching bolts and remove hinge strap.
5. To install, reverse removal procedure.

NOTE: Prior to installation, apply heavy-bodied sealer to surface of hinge that contacts roof reinforcement, also underside of bolt and washer.

Adjustment

Prior to installing counterbalance support assemblies to tailgate, the body side hinge should be adjusted.



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Fig. 7-102-Body Side Hinge Attachment

However, adjustment may be performed after the counterbalance support assemblies have been attached to the tailgate by referring to "Tailgate Alignment" at the end of this section.

1. While inside the rear of the vehicle and the tailgate closed to the fully locked position, loosen three body-side hinge strap attaching bolts.

NOTE: Attaching bolt washers incorporate locking barbs, therefore it may be necessary to pry washer from roof reinforcement in order to permit relocation of hinge strap assembly.

2. Have helper outside of vehicle position tailgate in opening. Top of tailgate must be 1/4" from roof panel. When counterbalance support assemblies are installed tailgate will move slightly rearward resulting in a proper gap of 5/16" at roof panel.
3. Torque body-side hinge strap attaching bolts 7 to 8 foot-pounds.
4. Paint touch-up perimeter of hinge strap as required.

NOTE: Refer to "Up-Down Adjustment" at rear of this section for gate side hinge adjustment.

TAILGATE ALIGNMENT

Description

The tailgate is adjustable up-down, fore-aft and laterally within its body opening. All adjustments are performed at the hinge straps (both gate and body side) and at the lock striker.

The gate-side hinge strap and lock striker are accessible without trim removal. Only the back body opening upper finishing molding need be removed for body side hinge strap accessibility.

CAUTION: Do not loosen body-side hinge strap attaching bolts with tailgate in any position other than fully open because force exerted by counterbalance support assemblies will cause hinge strap to lunge rearward into the extreme adjusting slot.

Fore-Aft and Lateral Adjustment - Top of Tailgate

1. With tailgate closed, determine amount of adjustment required.
2. Open tailgate and mark perimeter of body-side hinge strap.

3. Remove screw retained back body opening upper finishing molding.
4. Loosen both body-side hinge strap attaching bolts located beneath finishing molding.

NOTE: Attaching bolt washers incorporate locking barbs, therefore it may be necessary to pry washer from roof reinforcement in order to permit relocation of hinge strap assembly.

5. Use wooden block or similar caulking tool and mallet to shift hinge strap to desired location.
6. Securely tighten both hinge strap attaching bolts.
7. Slowly close tailgate to fully locked position. If lock does not engage with striker because of new tailgate position, relocate striker.
8. Check tailgate position in opening. If further adjustment is required, repeat preceding steps (Fig. 7-103).

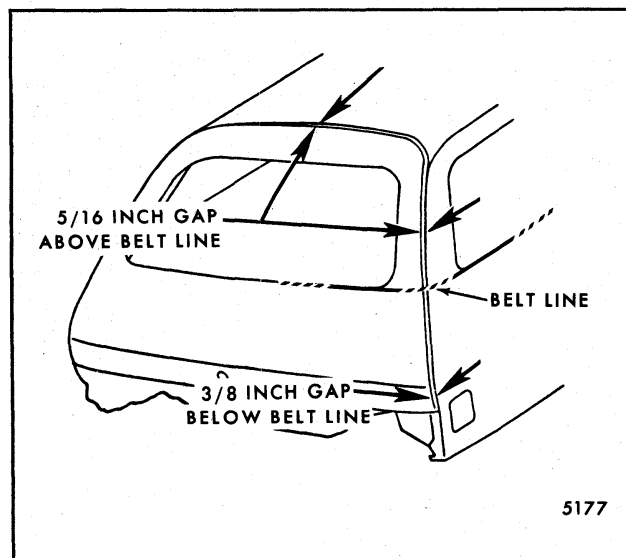


Fig. 7-103-Tailgate Alignment

9. Torque hinge strap attaching bolts 7 to 9 foot-pounds.
10. Install back body opening upper finishing molding.
11. Touch-up painted surface as required.

Fore-Aft and Lateral Adjustment - Bottom of Tailgate

1. With tailgate closed, determine amount of adjustment required.

2. Open tailgate and mark perimeter of striker washer.
3. Using striker bolt tool J-23457 or equivalent, loosen striker and relocate as required.

NOTE: Striker must be centered in lock frame.

4. Securely tighten striker bolt and close gate to check alignment. Repeat preceding steps if required (Fig. 7-103).
5. Open tailgate and torque striker bolt 34 to 46 foot-pounds.
6. Remove mark and touch-up with paint perimeter of striker washer as required.

Up-Down (Flush) Adjustment - Top of Tailgate to Roof Panel

1. With tailgate closed, determine amount of adjustment required (above or below flush).
2. Open tailgate and mark perimeter of gate-side hinge strap(s).
3. Loosen two gate-side hinge strap bolts and shift gate on hinge. Repeat on opposite gate-side hinge if required.

4. Securely tighten hinge bolts and close to check alignment. Repeat preceding steps if required.
5. Open tailgate and torque hinge bolts 7 to 9 foot-pounds.

TAILGATE LUBRICATION

Description

All mechanical components that have relative motion with other parts are lubricated during assembly. If additional lubrication is required, the specified materials or their equivalents as stated here should be used.

The following tailgate components should be lubricated when required with a thin coat of white lithium soap grease (Fiske Bros. Lo-Temp Lubriplate No. 777 or equivalent).

1. Tailgate lock fork bolt.
2. Tailgate hinge pins.

Counterbalance support assembly grommets are constructed of a special material that does not require lubrication.

SINGLE ACTING TAILGATE - "A-80" STYLE

DESCRIPTION

The single acting tailgate for pick-up delivery styles is fabricated primarily of an outer and an inner panel with reinforcements provided at critical attachment locations. An opening in the inner panel allows access to the lock remote control and remote control rods. The tailgate is unlatched by a remote control handle located at top center of the outer panel and is supported in the open (horizontal) position by a support cable on each side of the gate.

TAILGATE INNER PANEL ACCESS HOLE COVER

The single acting tailgate employs an inner panel access hole cover which is secured to the inner panel entirely by screws (Fig. 7-104). The cover panel may be removed with the tailgate in either the open or closed position.

Removal and Installation

1. Remove screws securing cover panel to inner panel and remove panel.
2. To install, reverse removal procedure.

TAILGATE HINGE ASSEMBLY

Removal and Installation

1. Open tailgate and provide support on side from which hinge is to be removed. Mark location of hinge on tailgate and body.
2. Remove tailgate hinge attaching bolts from tailgate and body and remove hinge (Fig. 7-105).
3. To install, reverse removal procedure. Prior to installation, apply a coat of heavy-bodied sealer

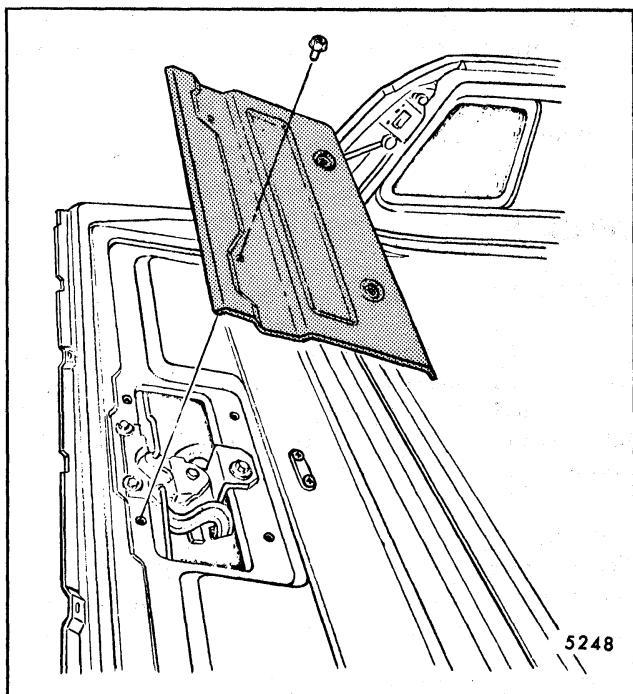


Fig. 7-104-Tailgate Inner Panel Access Hole Cover

to surface of hinge that contacts body and tailgate.

4. Check alignment of tailgate in body opening and adjust as required (Refer "Adjustments" - Tailgate Assembly).

TAILGATE SUPPORT CABLE(S)

Removal and Installation

1. Support tailgate in open position.
2. Disengage support cable return spring and remove cable attaching bolts on tailgate and body pillar (Fig. 7-106). Remove support cable.
3. To install, reverse removal procedure.

TAILGATE ASSEMBLY

Removal and Installation

1. Open tailgate and support in horizontal position.
2. Disengage support cable return springs and remove support cable attaching bolts on tailgate (Fig. 7-106).
3. With the aid of a helper, remove right and left tailgate hinge to gate attaching bolts and remove tailgate from body.

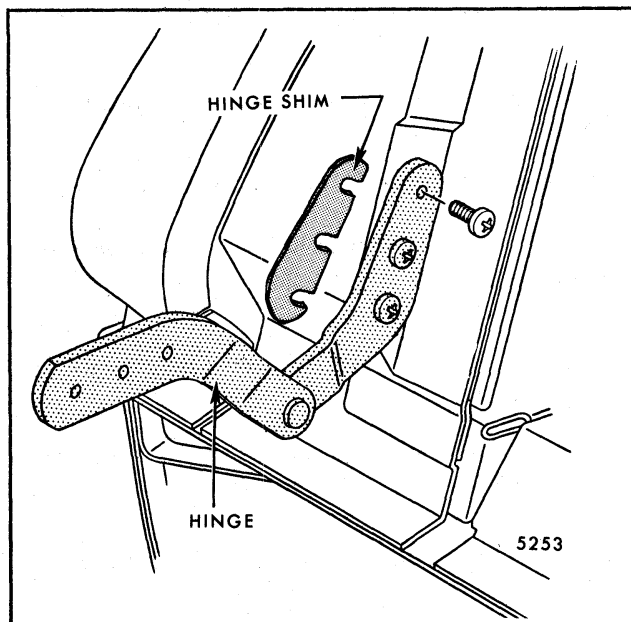


Fig. 7-105-Tailgate Hinge Assembly

4. To install, reverse removal procedure. Prior to installation, apply a coat of heavy-bodied sealer to surface of hinges that contact tailgate.

Adjustments

Up-down and fore-aft adjustment is provided at hinge to gate attaching bolts. Side to side adjustment is achieved at hinge to body attaching bolts with spacer(s) (Fig. 7-105). Use spacer(s) provided or substitute with 1/2" inside diameter plated flat washer 1/16" thick at each hinge attaching bolt location on affected side.

NOTE: Following any adjustment of the tailgate, check engagement of latches to strikers as described in "Tailgate Latch Striker Adjustment".

TAILGATE LOCK REMOTE CONTROL ASSEMBLY

Removal and Installation

1. Remove tailgate inner panel access hole cover (Fig. 7-104).
2. Disconnect remote control-to-latch rods at remote assembly by sliding rod attaching clips out of engagement (Fig. 7-109).
3. Remove two self-tapping bolts securing outside pull handle to lock remote control assembly and remove handle (Fig. 7-107).

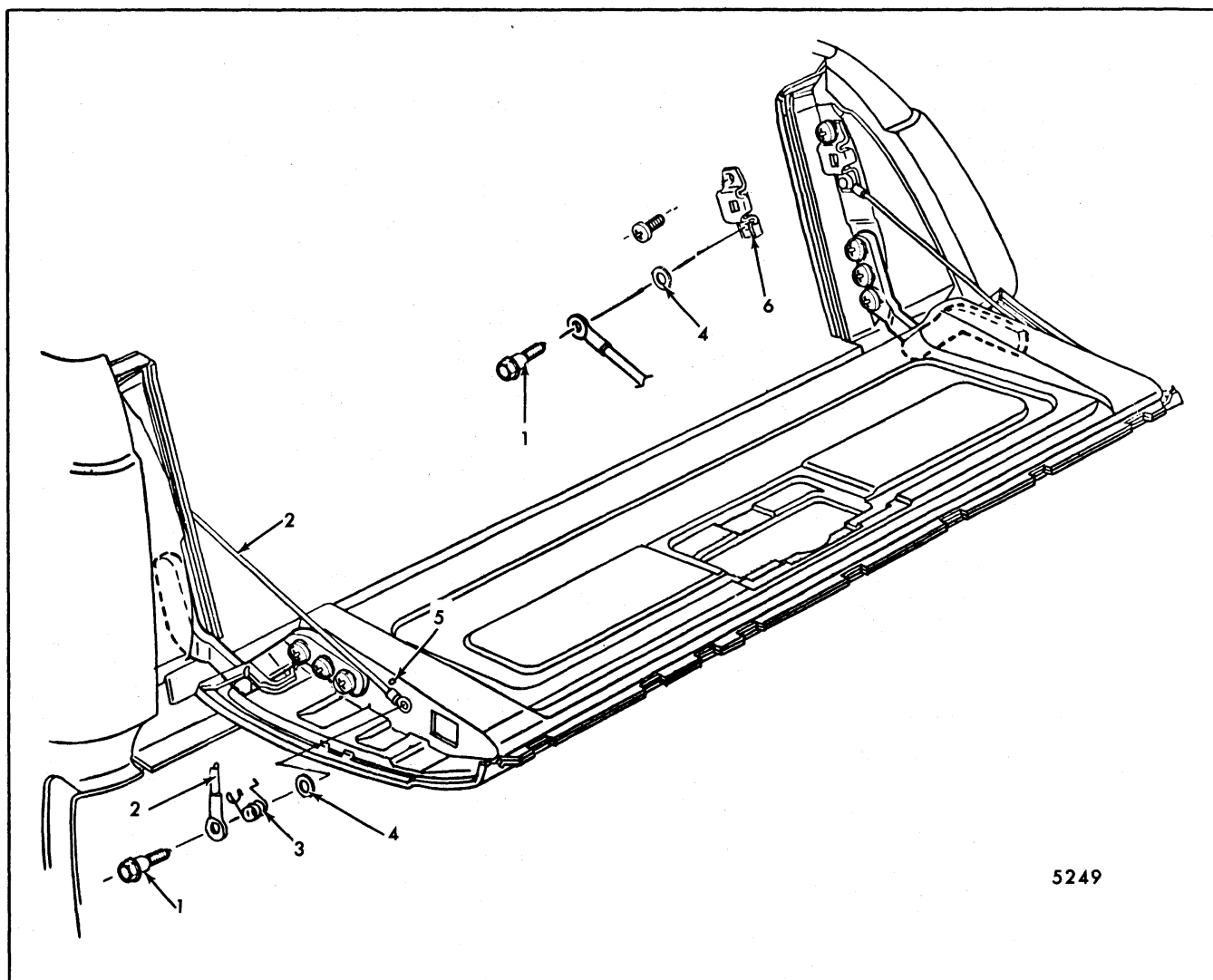


Fig. 7-106-Tailgate Support Cable Attachment

- | | | |
|-----------------------------------|-----------------------------------|---------------------------------|
| 1. Support Cable
Shoulder Bolt | 3. Support Cable Assist
Spring | 5. Assist Spring Anchor
Hole |
| 2. Support Cable | 4. Support Cable
Washer | 6. Latch Striker |

4. Remove remote control attaching bolts and withdraw assembly from tailgate. Refer to Figure 7-108 showing hardware components removed from tailgate.
5. To install, reverse removal procedure.

Adjustments

To assure simultaneous action of right and left latches, loosen remote control assembly bolts, position assembly so that remote arms contact latch rod rotors and tighten remote control bolts (Fig. 7-109).

TAILGATE LATCH ASSEMBLY - RIGHT OR LEFT

Removal and Installation

1. Remove tailgate inner panel access hole cover (Fig. 7-104).
2. Disengage remote control-to-latch rods at remote control assembly (Fig. 7-109).
3. Remove bolts securing latch assembly to tailgate and withdraw latch with control rod attached

TAILGATE LATCH STRIKER - RIGHT OR LEFT

Removal and Installation

1. Open tailgate and mark position of striker on body pillar.
2. Remove latch striker attaching screws and remove striker from body pillar (Fig. 7-106).

NOTE: Lower latch striker attaching screw is used to secure support cable to body pillar therefore, it will be necessary to support tailgate if both latch strikers are to be removed.

3. To install, align striker within marked area and install attaching screws.

TAILGATE ADJUSTMENTS

1. To adjust the tailgate latch striker up and down or fore and aft, loosen striker attaching screws, shift striker to desired position and tighten attaching screws.
2. Dimensional specifications for use of latch striker spacers are found in Figure 7-110.
 - a. Tailgate should be properly aligned before checking spacer requirements.

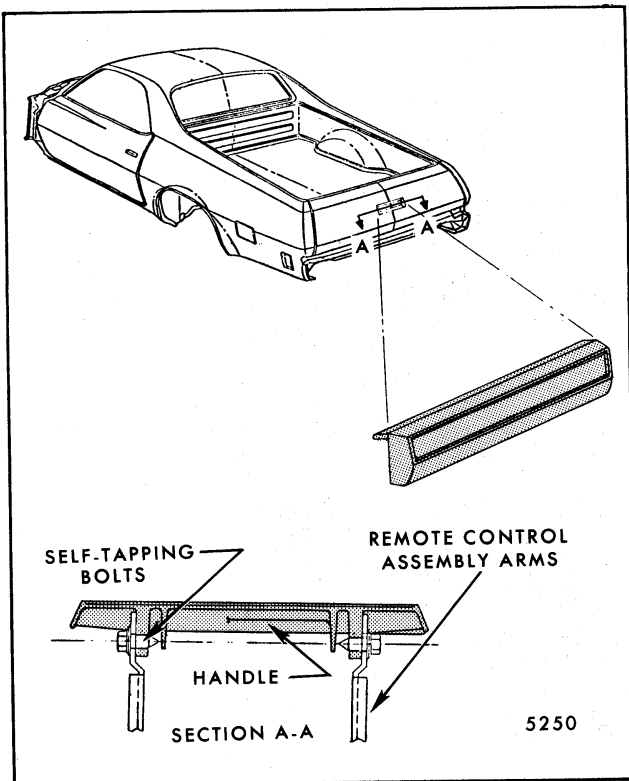


Fig. 7-107 - Tailgate Outside Handle

from gate. Remove control rod from latch if required, as a bench operation (Fig. 7-109).

4. To install, reverse removal procedure.

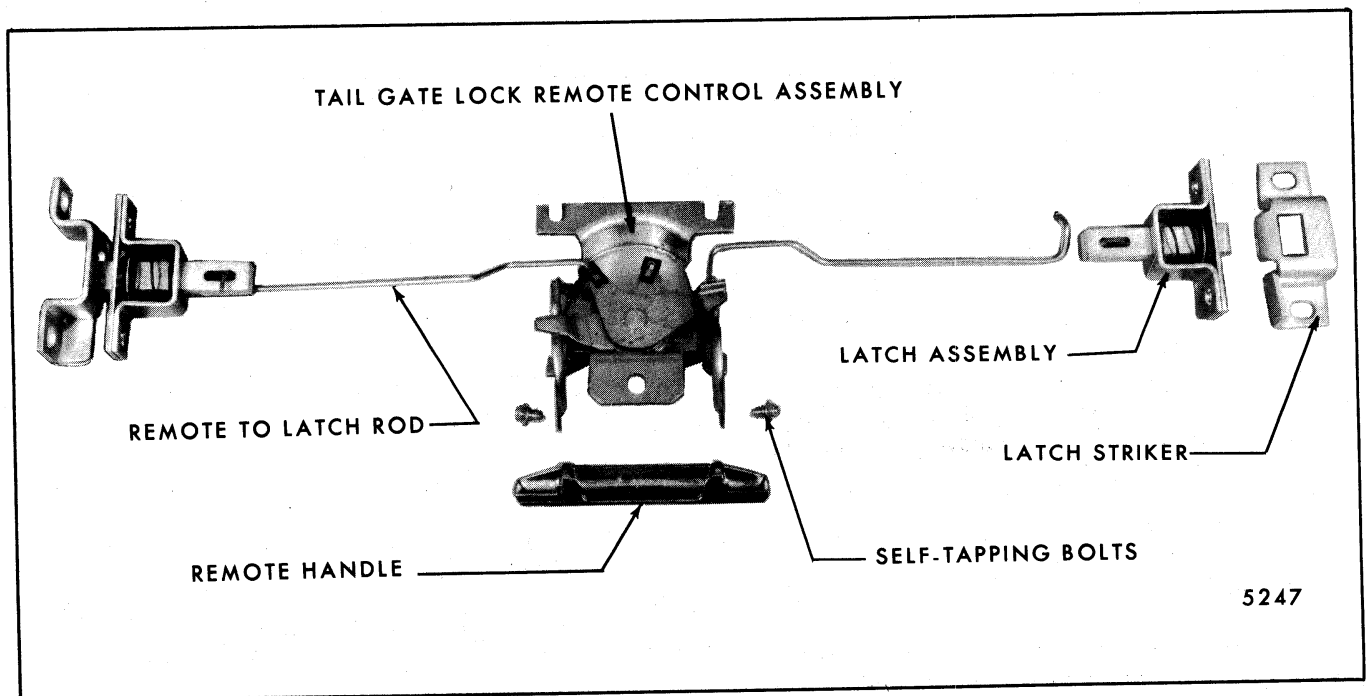


Fig. 7-108-Tailgate Hardware Components

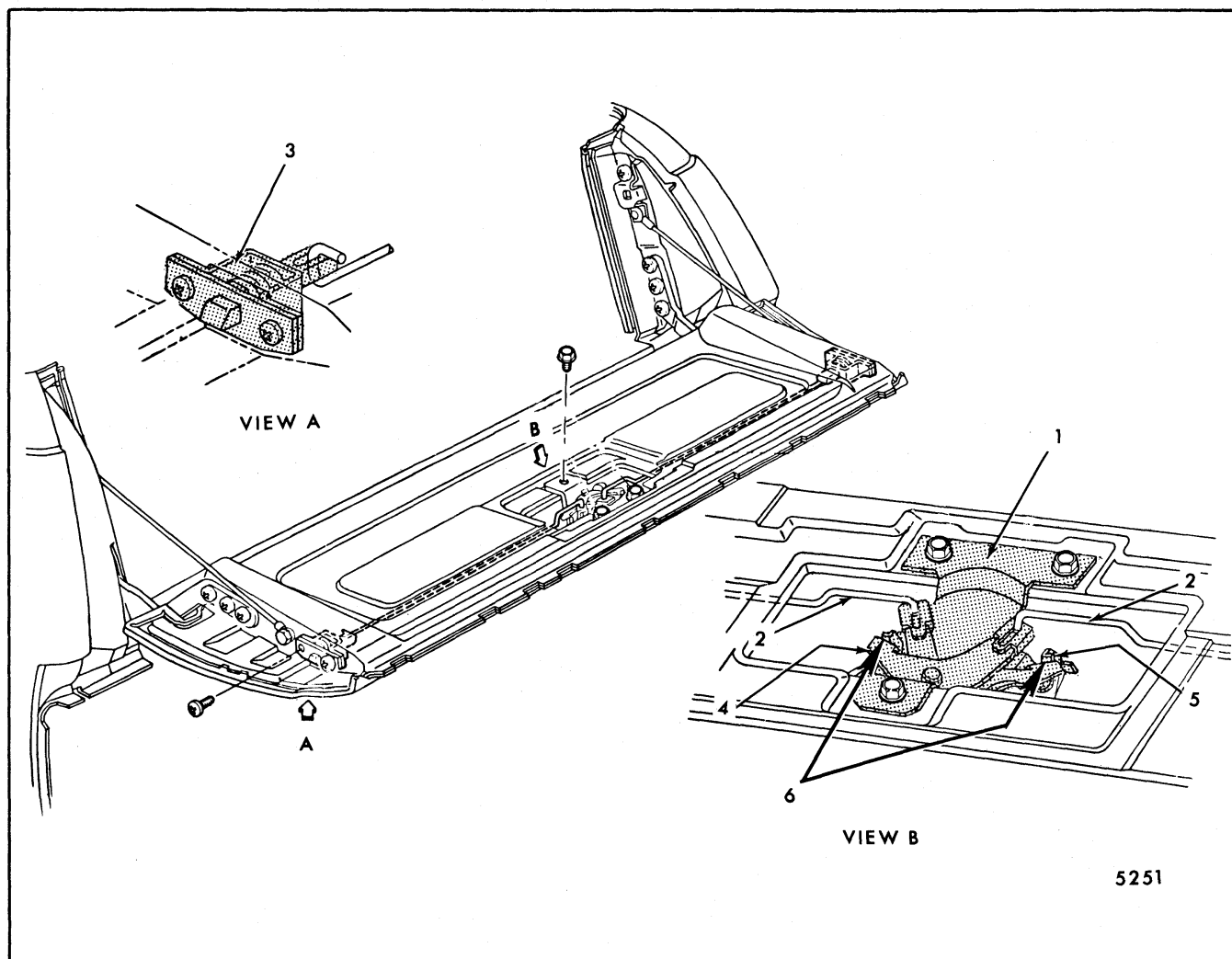


Fig. 7-109-Tailgate Hardware Installed

- | | | |
|--------------------------------|---------------------|---|
| 1. Remote Control Assembly | 3. Latch Assembly | 6. Point of Contact-Remote Arms to Contact Latch Rod Rotors |
| 2. Remote Control to Latch Rod | 4. Latch Arm Rotors | |
| | 5. Remote Arms | |

- b. To determine if tailgate latch striker spacers are required, mark the latch as indicated in Section B-B, Figure 7-110 with a bright colored crayon then slam gate closed to insure full latch to striker engagement.
- c. If marks "A and B" are visible when viewed through gap between back body pillar and tailgate pillar (Arrow C, Fig. 7-110), install a spacer (1/16" thick plated flat washer - 1/2" I.D.) between striker and pillar at striker attaching bolt locations. Add additional spacers as required until only mark "B" is visible inboard of striker.
- d. If neither mark "A" or "B" appear inboard of striker, remove spacers from behind striker until only mark "B" is visible.
- e. If only mark "B" is visible inboard of striker during initial check, latch to striker engagement is satisfactory.

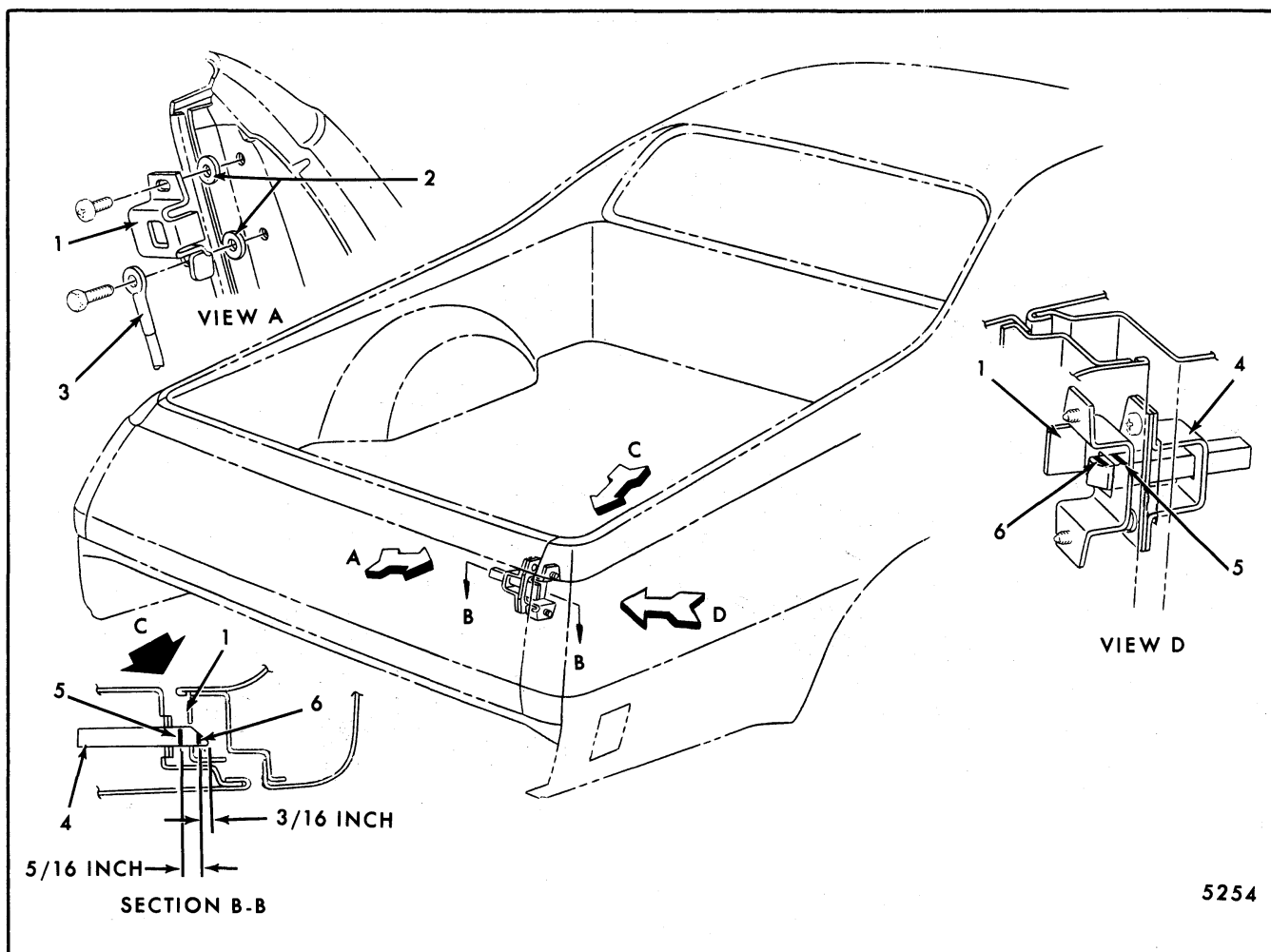


Fig. 7-110-Tailgate Latch to Striker Adjustment

1. Striker
2. Spacers

3. Support Cable
4. Latch Assembly

5. Crayon Mark B
6. Crayon Mark A

RETRACTABLE TAILGATE - "B-35, 45" STYLE

DESCRIPTION

The retractable tailgate is designed to lower into the underbody and in general follows the body contour during the opening and closing cycles. Similarly, the back window, which is separate from the gate, raises upward and into the space between the roof inner and outer panels.

The power operated window (standard equipment) can be operated by either of two control switches; one on the instrument panel and one (key operated) at the rear of the right quarter outer panel, adjacent to the gate.

The power operated tailgate (optional equipment) may be operated by the exterior key switch. Remote operation by an instrument panel switch is possible provided ignition switch is in "Run" position and transmission is in "Park" or "Neutral" ("Park" only on some styles).

For power operated tailgates, the exterior control switch incorporates three detents each to the right and left of center (vertical) position. Rotation of the switch to the first detent operates the window, second detent the tailgate and third detent is for simultaneous operation of window and tailgate. The exterior switches actuate opening cycles when

rotated clockwise and closing cycles when rotated counterclockwise.

The manual tailgate may be released from the fully closed (latched) position only by the exterior control switch. Rotation of the key to the first position (clockwise) opens the tailgate window. After the window raises approximately 8 inches, clockwise rotation of the knob mechanically releases the tailgate for manual lowering. A grip handle at top center of the manual tailgate is provided for manual raising and latching of the gate. Rotation of the key counterclockwise closes the tailgate window.

A design feature prevents counterclockwise rotation of the exterior key switch for lowering (closing) the window until the manual tailgate is fully closed. Another safety feature prevents lowering the window from the instrument panel switch (beyond a point approximately 8 inches above the beltline) until the manual tailgate is fully closed.

Control of the window and power operated tailgate from the instrument panel is accomplished with individual switches. The safety features provided with the manual tailgate with relation to the window, are not required with the power operated tailgate option.

Figure 7-111 identifies the component parts of the retractable tailgate and window and their relationship.

For the purpose of clarity, the following retractable tailgate information is divided into four major groups:

1. Weatherseal
2. Window system
3. Tailgate system
4. Window and tailgate control system

BACK BODY OPENING WEATHERSTRIP

Description

The back body opening weatherstrip is of two-piece design with a butt joint located at the bottom and top of the opening (Fig. 7-112). Below the belt, the weatherstrip is cemented into screw applied channel-type retainers. The weatherstrip includes a sculptured detail area (referred to as the "mucket") at the beltline to seal the body opening off-set. At this area, the weatherstrip is retained by cement, screws and nylon drive nail fasteners. Above the beltline, the weatherstrip is retained by cement and screw-attached retainers applied over the weatherstrip.

Removal and Installation

1. Raise tailgate window. Remove down travel stop on rear cross bar and lower tailgate (Fig. 7-113).
2. Remove right and left pillar finishing moldings and window inner filler strips.
3. Remove screws securing weatherstrip retainers above beltline, at "mucket" areas (including drive nail fasteners) and at lower corners of back body opening (Fig. 7-112).

NOTE: Kent Products "Special Release Agent" or equivalent may be used to loosen and/or dissolve weatherstrip cement.

4. With a flat-bladed tool, carefully remove weatherstrip around entire back body opening. Separate the weatherstrip at either or both butt joint to facilitate removal between hinge lift arm and tailgate.

To install weatherstrip, apply a bead of black weatherstrip cement into the retainer below the beltline, around the upper half of the back body opening and load sealers into the "mucket" as shown in Figure 7-114. Secure "mucket" to back body pillar off-set with drive nail fasteners and screws. Next, install the lower weatherstrip section into the retainer. Finish by aligning the retainer to the upper weatherstrip section (locate side retainer as close as possible to "mucket" drive nail fastener) and secure with screws. Cut off excess weatherstrip to form a butt joint, insert plug to maintain shape and cement ends together at top and bottom of body opening.

TAILGATE BELT WEATHERSTRIP

Description

The tailgate belt weatherstrip is cemented to an adjustable (fore-aft) metal retainer which is fastened to the top of the tailgate by screws (Fig. 7-115). A strip of closed cell nitrile foam tape is positioned between the retainer and the top of the tailgate to prevent water entry beneath the retainer. Approximately 2 inches of belt weatherstrip extends beyond each end of the metal retainer. This section of weatherstrip (each end) is secured directly to the tailgate by cement and a single screw.

Removal and Installation

1. Remove screws securing end of weatherstrip to

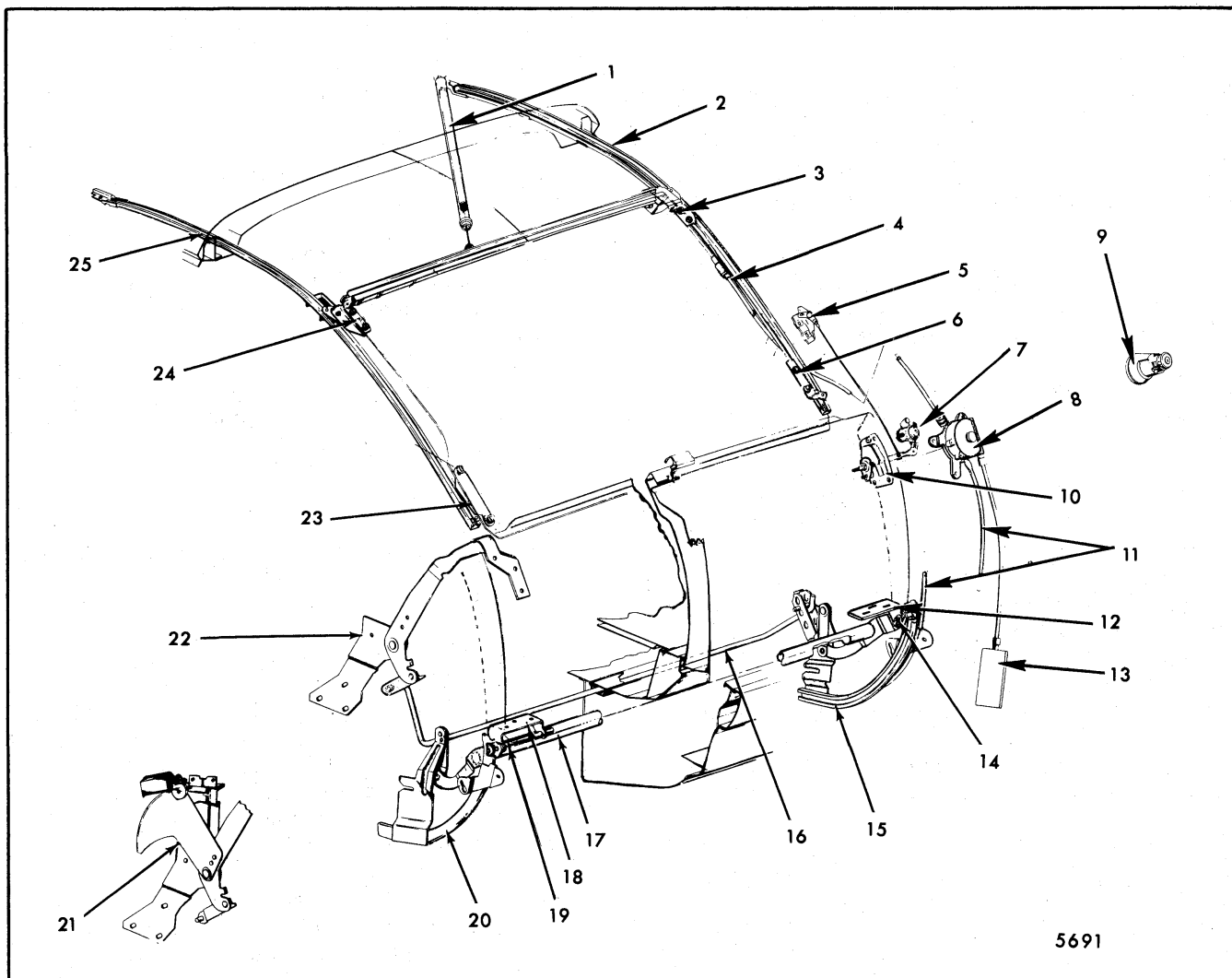


Fig. 7-111-Retractable Tailgate and Window Hardware

- | | | | |
|--|---|---|--|
| 1. Window Lift Spring and Silencer | 7. Lock and Release Switch Assembly - (Manual Gate) | 14. Torque Roller and Shaft Assembly - Right | 20. Tailgate Guide Channel Assembly - Left |
| 2. Window Guide Cam Assembly - Right | 8. Window Regulator Assembly | 15. Tailgate Guide Channel Assembly - Right | 21. Lift Arm Hinge and Regulator Assembly - (Electric) |
| 3. Window Guide Roller Assembly - Upper Right | 9. Window and Gate Switch Assembly (Power Gate) | 16. Tailgate Hinge Torque Rod | 22. Lift Arm Hinge Assembly - (Manual) |
| 4. Window Drive Cable Assembly | 10. Tailgate Lock Assembly | 17. Tailgate Synchronizing Torque Tube Assembly | 23. Window Guide Roller Assembly - Lower Left |
| 5. Window Stop Cable and Clip Assembly - (Manual Gate) | 11. Window Regulator Storage Conduit | 18. Tailgate Roller Support - Left | 24. Window Guide Roller Assembly - Upper Left |
| 6. Window Guide Roller Assembly - Lower Right | 12. Tailgate Roller Support - Right | 19. Torque Roller and Shaft Assembly - Left | 25. Window Guide Cam Assembly - Left |
| | 13. Window Motor Assembly | | |

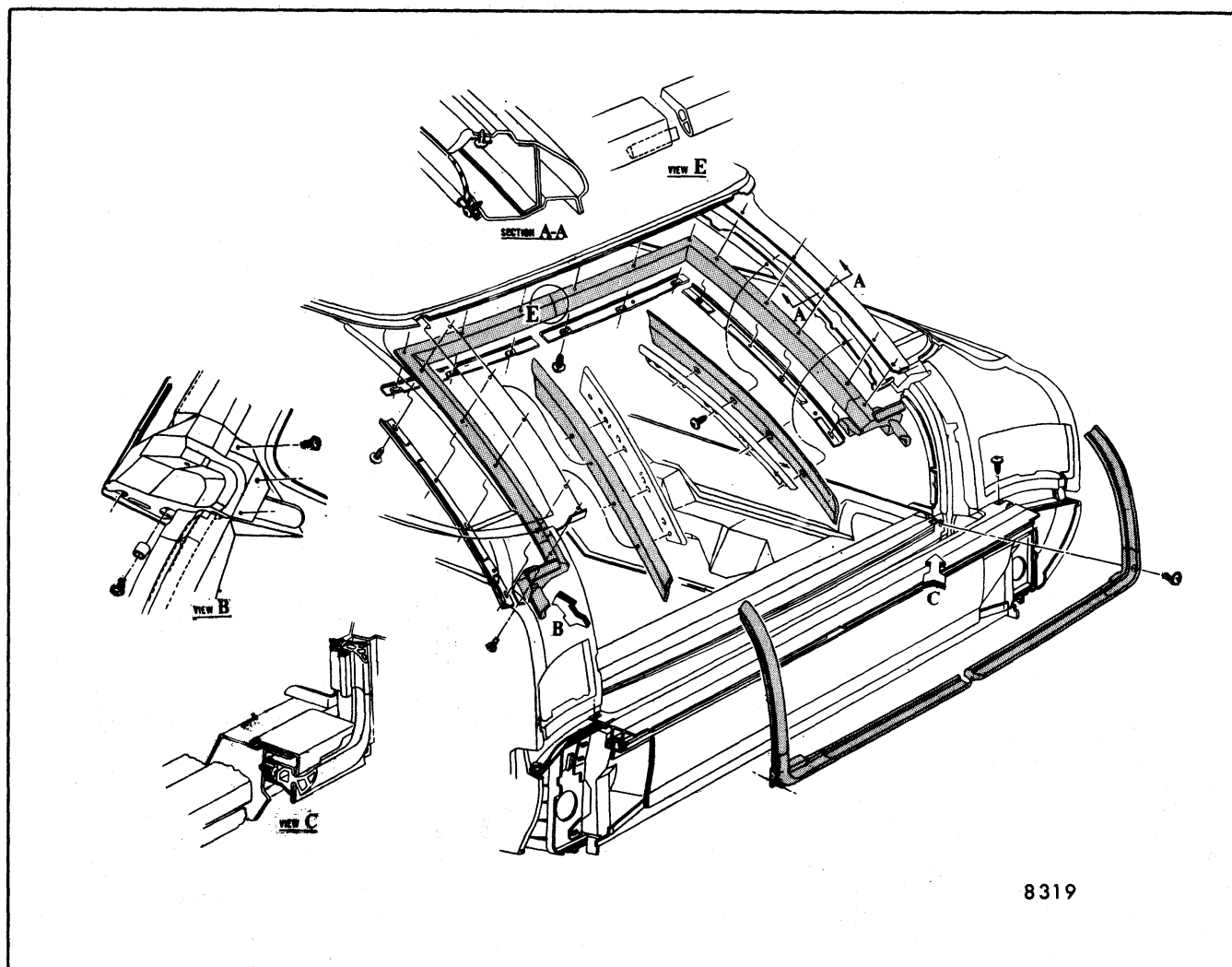


Fig. 7-112-Back Body Opening Weatherstrip Retention

tailgate and with flat-bladed tool, carefully remove weatherstrip from its retainer (Fig. 7-115).

NOTE: Kent Products "Special Release Agent" or equivalent may be used to loosen and/or dissolve weatherstrip cement.

2. To install, reverse the removal procedure.

NOTE: The tailgate belt outer sealing strip is integral with belt reveal molding and is removed as a unit.

TAILGATE WINDOW INNER FILLER STRIP

Description

A black rubber filler strip is used at the inboard surface of each back body pillar above the beltline

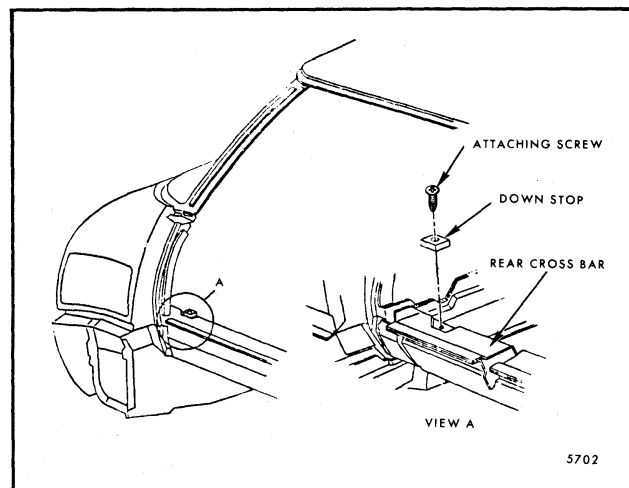


Fig. 7-113-Tailgate Lift Arm Down Stop

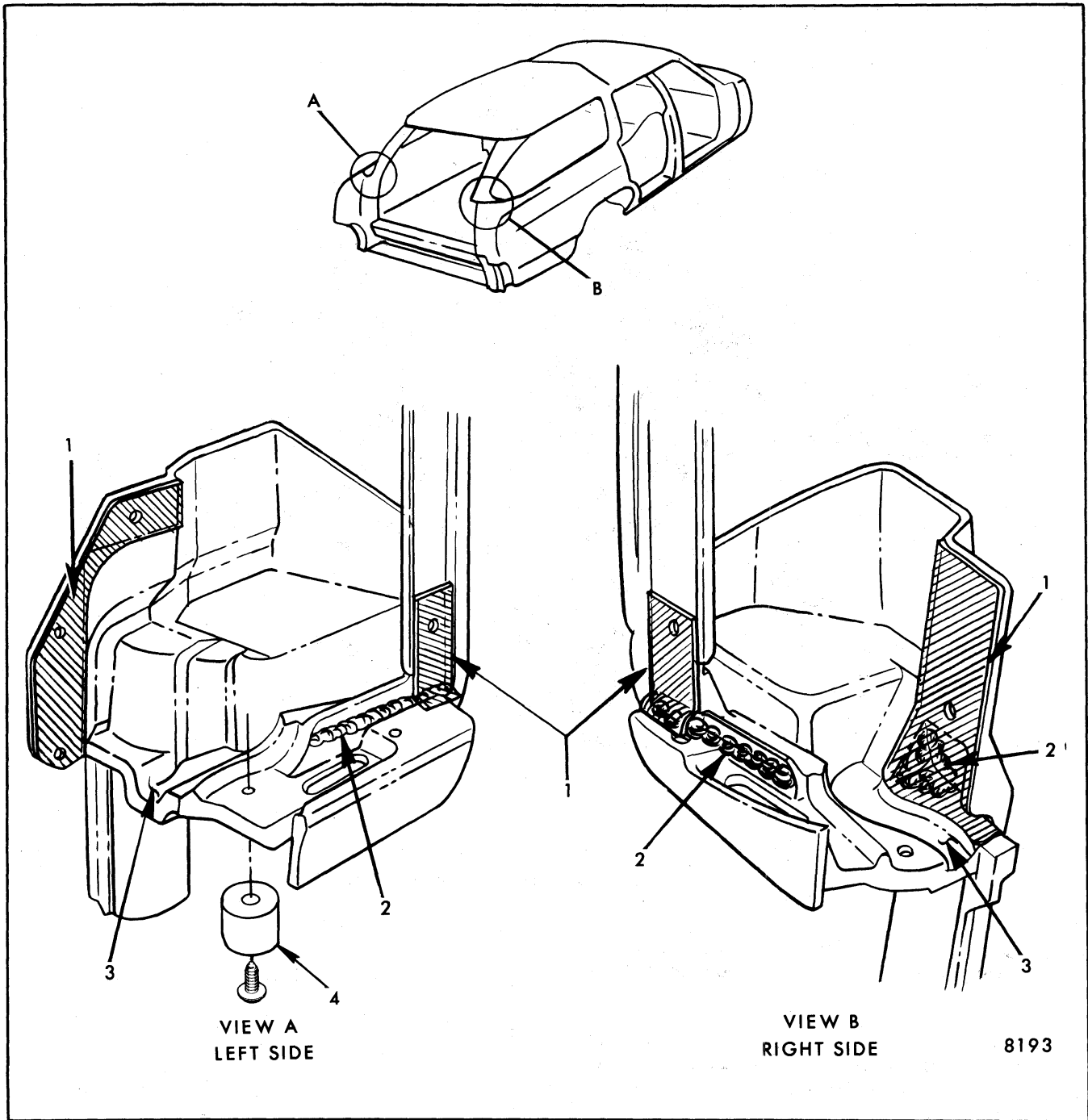


Fig. 7-114-Mocket Sealer Locations

- | | | | |
|---|--|---|--|
| 1. Apply Black Weatherstrip Cement To This Area | 2. Apply Body Caulking Material To This Area | 3. Drain Canal Must Be Kept Free of Sealers | 4. Tailgate Up Stop - Manual Gate Only |
|---|--|---|--|

and serves to conceal the window supporting hardware (Fig. 7-115). On styles equipped with tailgate window grid defogger option, the lip of the filler strip incorporates a bonded pile strip in the area of glass contact to protect grid defogger lines from abrasion during glass cycling. A metal retainer is positioned

over the heel of the filler strip and secured to the pillar with screws. A pillar finishing molding is applied over the filler strip and the inboard edge is tucked into the filler strip retainer. A plastic, color-keyed, filler strip is used at the top of the body opening (Fig. 7-116).

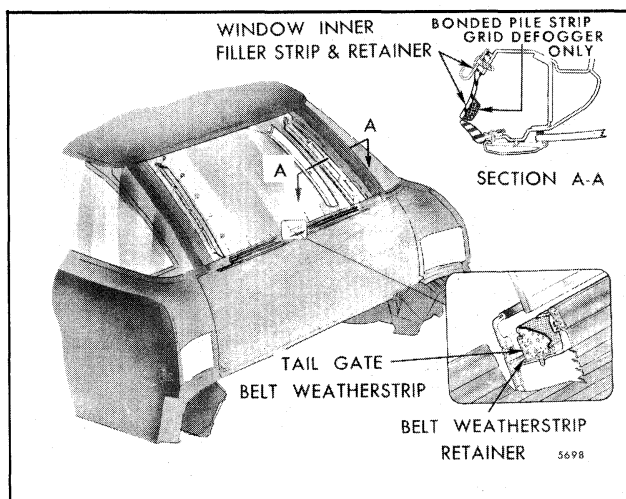


Fig. 7-115-Tailgate Belt Weatherstrip and Window Inner Filler Strip

Removal and Installation

1. Remove back body pillar and/or upper body opening finishing molding (Fig. 7-116).
2. Remove screws securing inner filler strip section and remove filler strip (Fig. 7-115, Section A-A).
3. To install, reverse removal procedure.

TAILGATE BOTTOM DRAIN HOLE SEALING STRIPS

Removal and Installation

1. With tailgate in the closed position, remove back body lower housing access hole covers (Fig. 7-117).

WARNING: WHEN PERFORMING TAILGATE SERVICE OPERATIONS THROUGH ACCESS OPENINGS IN BODY REAR LOWER HOUSING (FIG. 7-117), PLACE BODY TAPE OVER TAILGATE OPENING KEY CYLINDER TO PREVENT INADVERTENT OPERATION OF THE TAILGATE.

2. Working through lower housing access holes, detach fastener at each end of the strip and remove sealing strip.
3. To install, reverse removal procedure.

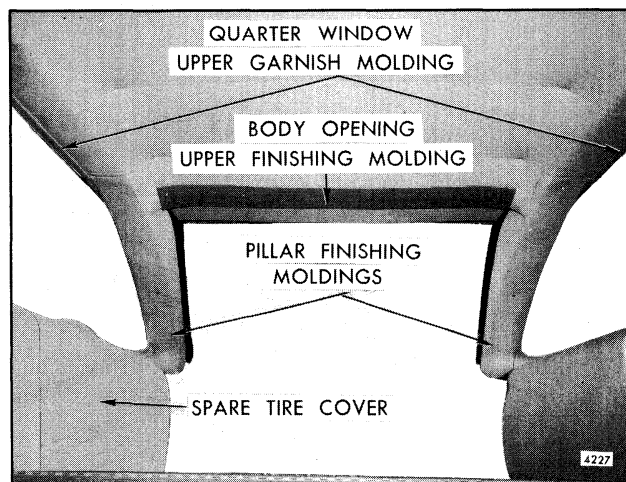


Fig. 7-116-Body Rear Finishing Moldings

BACK BODY LOWER HOUSING ASSEMBLY

Description

The back body lower housing assembly, an integral component of the body, serves as a storage area for the tailgate when the gate is lowered (Fig. 7-117). It is considered a "wet" area because it accepts water drained from inside the tailgate assembly as well as water that passes the filler strips between the tailgate outer panel and the upper housing. The lower surface of the housing is designed with a slope toward a drain slot on the right side. The back body upper housing which is bolted to the rear section of the lower housing, serves to enclose the tailgate storage area and provide support for rear bumper face bar attachments. Two access covers are secured to the underside of the lower housing and are provided to permit servicing the tailgate components contained therein.

Removal and Installation

1. Remove rear bumper face bar.
2. Remove bolts securing back body upper housing to lower housing and remove the upper housing.
3. To install, reverse removal procedure.

TAILGATE INNER PANEL ACCESS HOLE COVERS

Description

Two access hole covers are attached to the tailgate inner panel. One conceals the striker adjustment access hole and the other conceals the lift arm to inner

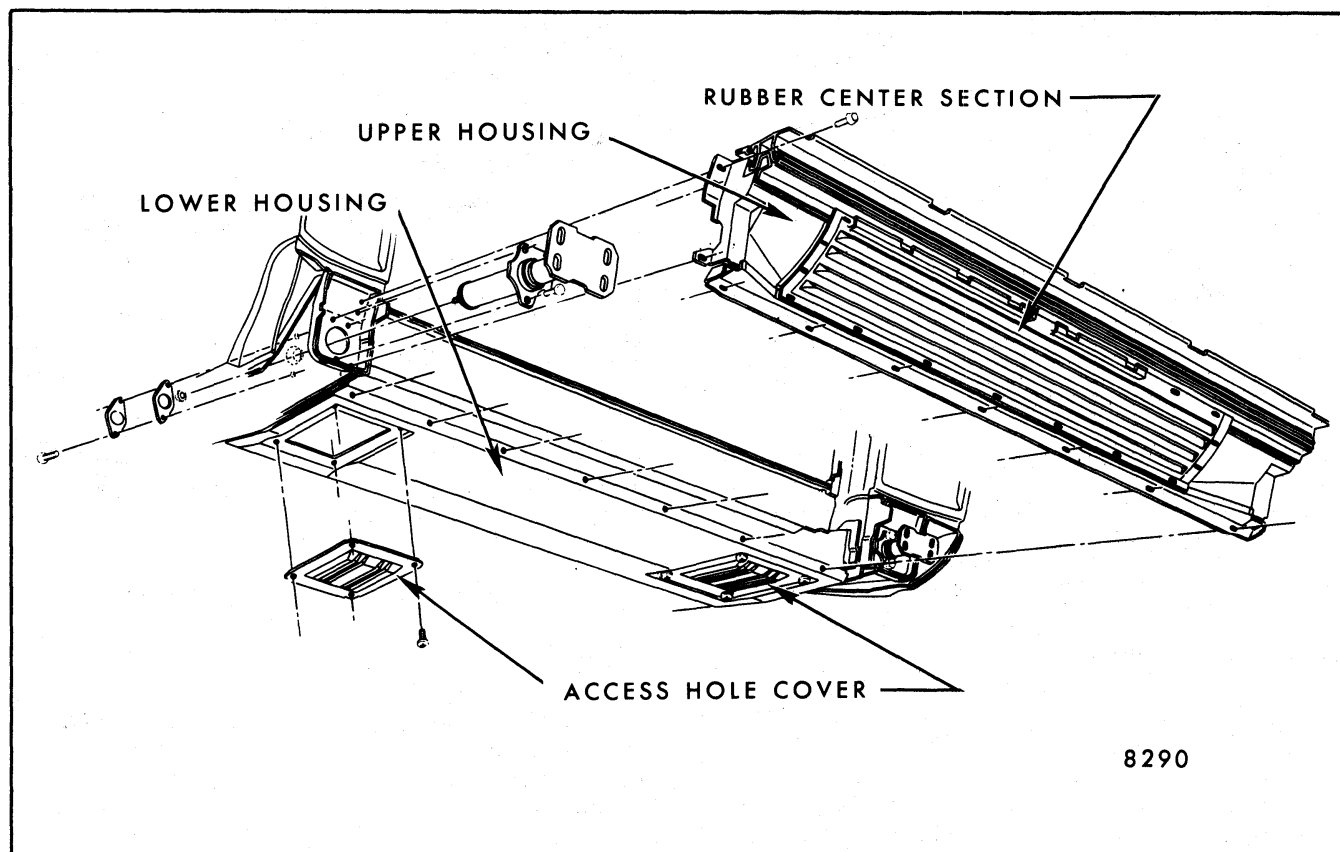


Fig. 7-117-Body Rear Upper and Lower Housing Components

panel attachment. Each cover is sealed with closed cell foam tape except along the upper edge and attached with four screws. The upper edge is unsealed in order to permit water, that may bypass the belt weatherstrip, to be channeled into the gate and drain out the bottom of the gate into the lower housing.

Removal

1. Remove screws securing access hole cover to tailgate (Fig. 7-118).
2. With a flat-bladed tool carefully break bond sealing inner panel to tailgate and remove panel.

Installation

1. Inspect sealing strip and repair if necessary with adhesive backed closed cell foam tape - 1/8 inch thick.
2. Install cover to tailgate inner panel and press firmly around periphery.
3. Apply body caulking to panel attaching screw threads and install screws.

TAILGATE WINDOW SYSTEM

Description

The tailgate window is physically independent of the tailgate in the sense that all glass support and operating components are mounted in the body shell rather than in the tailgate.

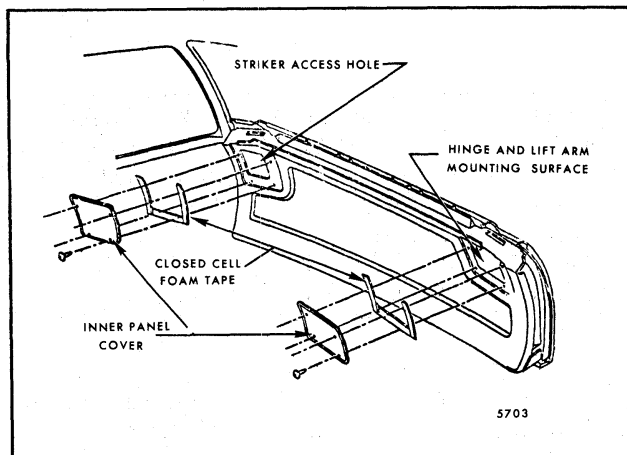


Fig. 7-118-Tailgate Access Hole Covers

The window motor, mounted to the rear of the spare tire well in the right quarter area, delivers torque to the window regulator assembly through a drive cable. The window regulator, in turn, drives another cable that is attached to the right upper glass roller support, thus moving the glass along the guide cams (Fig. 7-111).

TAILGATE WINDOW ASSEMBLY

Description

The tailgate window assembly consists of a solid tempered safety plate glass with a pressed-on upper sash channel. Attached to the upper sash channel is a window lift spring and silencer. A roller support is bolted to each corner of the glass. With this design, the tailgate glass, roller supports and upper sash channel (with or without lift spring) are removed from the body opening as a unit. Replacement glass and roller supports are assembled as a bench operation.

Removal and Installation

1. Remove finishing moldings from right and left pillars, from upper section of back body opening and remove upper and right side inner filler strips (Figs. 7-115 and 7-116).
2. Raise tailgate window and lower tailgate.
3. Carefully detach back body opening weatherstrip sculptured belt detail sections to approximately 5" below beltline. Rotate detached weatherstrip areas outboard to allow window clearance. Tape weatherstrip sections to body exterior (Fig. 7-119).

4. On power tailgate styles, lower window fully. On manual tailgate styles, manually snap lock bolt into locked position and lower window fully.

NOTE: On electrically heated back windows, on left side at upper left roller assembly, detach connector at bus bar and detach harness fastener from roller assembly (Fig. 7-135).

CAUTION: Maintain control of spiral electrical harness at rear of roof with body tape, or other suitable means to prevent the extended harness from recoiling into the roof inner construction.

5. Using adjustable pliers, detach spring from window upper sash channel (at center) and move spring to right side of body to relax spring tension. Avoid detachment of spring from window guide cam at front (Fig. 7-120).

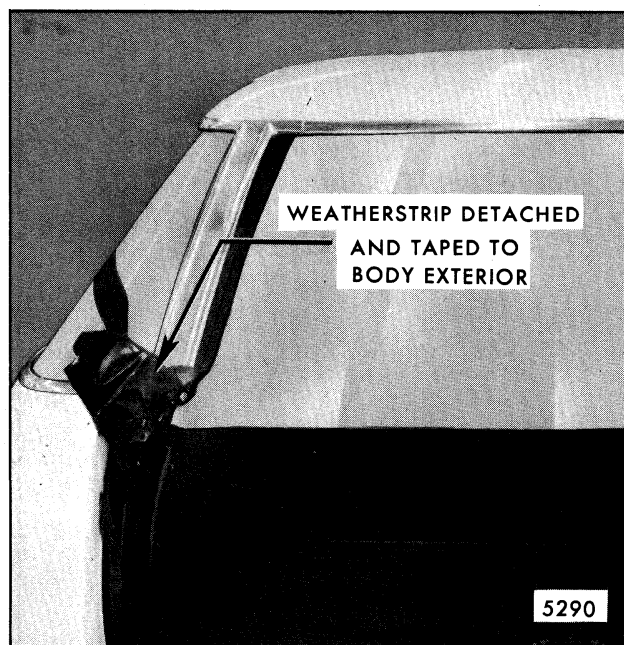


Fig. 7-119-Body Opening Weatherstrip Detachment for Window Removal

6. Remove drive cable flag retainer screw and move flag retainer inboard out of engagement with flag (Fig. 7-123).
7. While supporting glass, remove tailgate window down-travel stop(s) (Fig. 7-121) and carefully remove window.

NOTE: If additional clearance is required, adjust rear of guide cams down.

8. To install, reverse removal procedure.

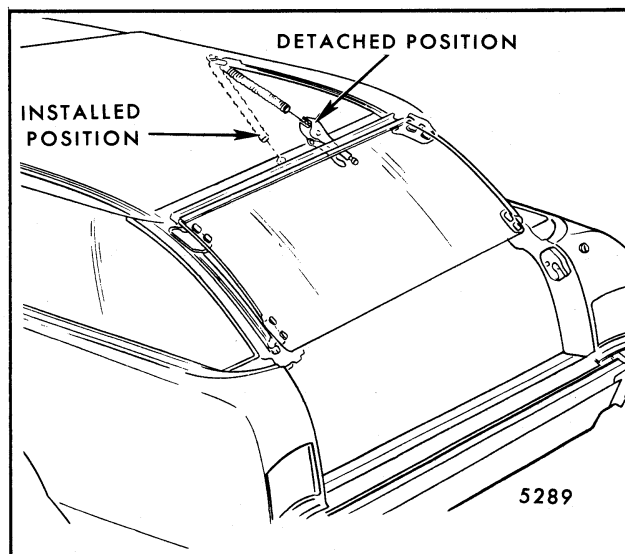


Fig. 7-120-Window Lift Spring Detachment

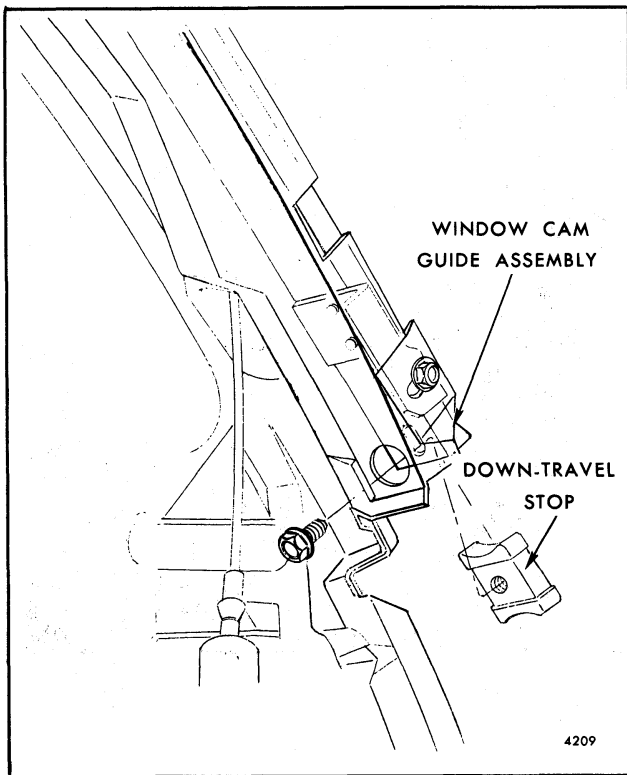


Fig. 7-121-Tailgate Window Down-Travel Stop

Tailgate window components are illustrated in Figure 7-122. Specified torque for the roller support-to-glass bolts is 72 inch- pounds.

Adjustment

Fore and aft adjustment of window for proper back body opening weatherstrip contact is made by adjusting both right and left window guide cams vertically at rear and midway attaching locations.

A cocked window adjustment is controlled by loosening and rotating the right upper roller support in desired direction (Fig. 7-123).

Window down-travel is controlled by an adjustable stop in lower end of window right guide cam for manual tailgates and both guide cams for power operated tailgates (Fig. 7-121).

TAILGATE WINDOW REGULATOR ASSEMBLY

Description

The tailgate window regulator assembly is mounted on the inner surface of the right hand back body pillar and is concealed by the spare tire cover (Fig.

7-124). A rubber-coupled gear drive within the regulator transfers torque delivered by the window motor to the window drive cable. When the window is lowered the drive cable is drawn through the regulator and into a storage conduit connected to the lower end of the regulator. Reverse direction of the drive cable raises the window.

Removal and Installation

1. Remove spare tire cover and spare tire.
2. Disengage window motor cable at window regulator assembly (Fig. 7-124).
3. Disengage window drive cable clip at upper end of regulator and remove cable storage conduit at lower end of regulator.
4. Remove three regulator attaching screws and rotate regulator clockwise off lower end of drive cable.
5. To install, reverse removal procedure.

TAILGATE WINDOW MOTOR ASSEMBLY

Description

The tailgate window motor is secured to a mounting plate and in turn, the plate is bolted to the inner surface of the right hand back body pillar behind the spare tire cover (Fig. 7-124). Rubber cushions insulate the plate from body metal, thereby requiring a separate ground strap to complete the motor circuit. Refer to the Electrical Section of this manual for details concerning the window motor and circuit.

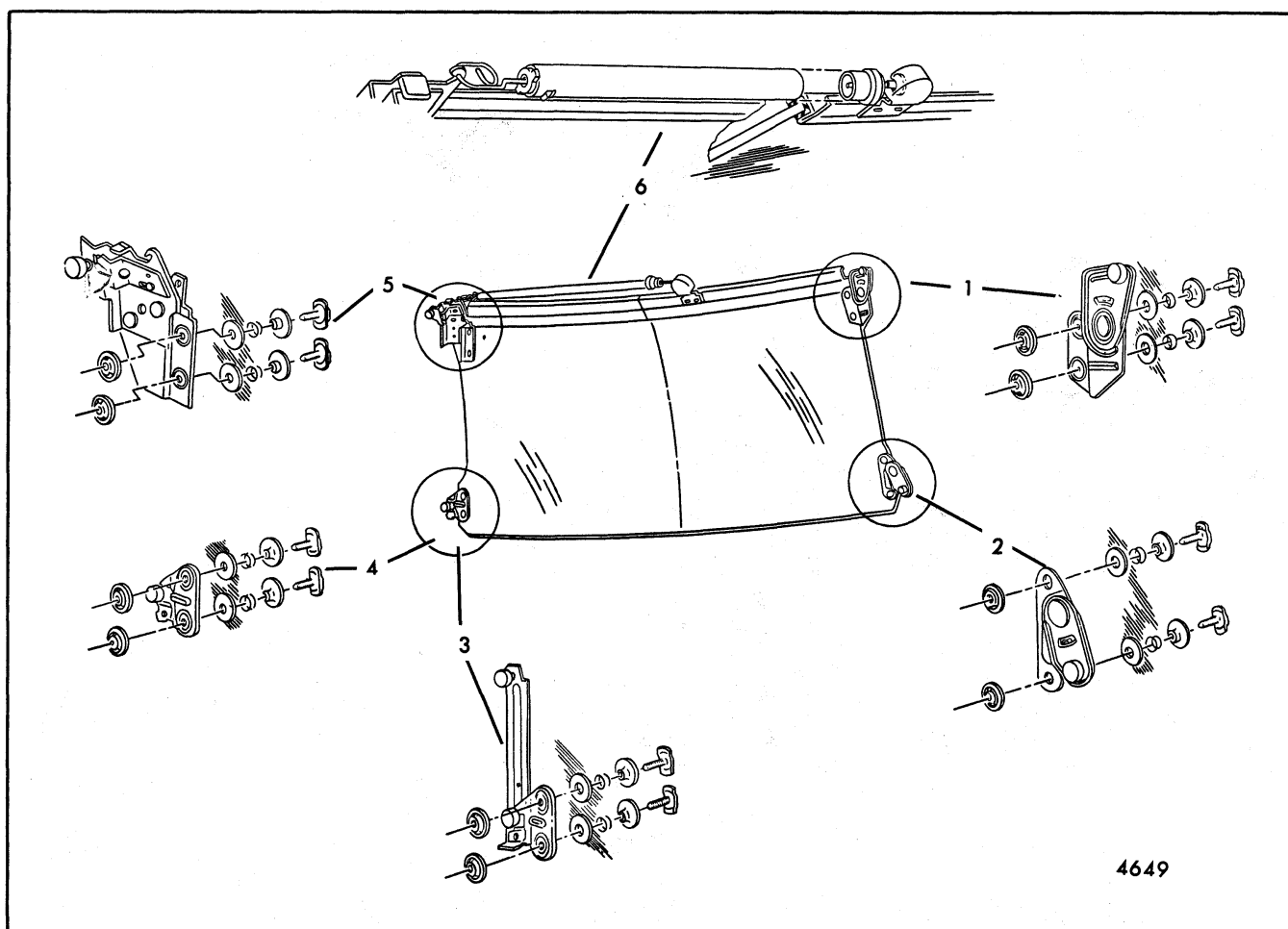
Removal and Installation

1. Remove spare tire cover and spare tire.
2. Disconnect motor electrical lead and disengage cable at upper end of motor (Fig. 7-124).
3. Remove motor mounting plate attaching screws and remove plate and motor assembly.
4. Disassemble motor from mounting plate as a bench operation.
5. To install, reverse removal procedure.

TAILGATE WINDOW MOTOR CABLE ASSEMBLY

Description

Torque is delivered from the motor to the window



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Fig. 7-122-Tailgate Window Components

- | | | | |
|--|--|--|---|
| 1. Window Guide Roller Assembly - Upper Left | 3. Window Guide Roller and Link Assembly - Lower Right (Manual Gate) | 4. Window Guide Roller Assembly - Lower Right (Power Gate) | 5. Window Guide Roller Assembly - Upper Right |
| 2. Window Guide Roller Assembly - Lower Left | | | 6. Window Lift Spring and Silencer |

regulator by a cable approximately 13 inches long. The cable is routed behind the basic body inner panel; however, access to each end of the cable for disconnect purposes is provided at the motor and regulator mounting locations (Fig. 7-124).

Removal and Installation

1. Remove spare tire cover and spare tire.
2. Disengage cable at motor and at window regulator assembly and remove cable.
3. To install, reverse removal procedure.

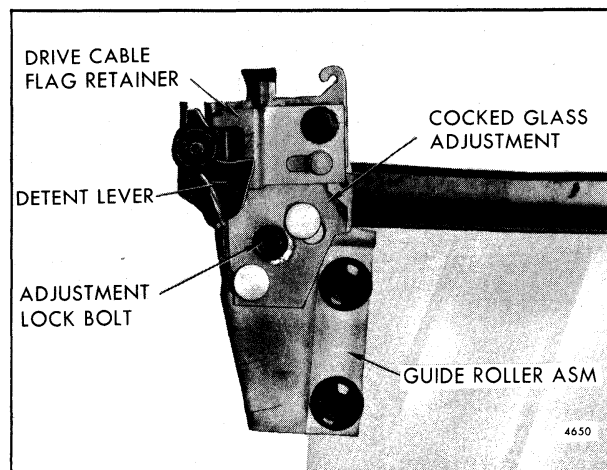


Fig. 7-123-Window Guide Roller Assembly - Upper Right

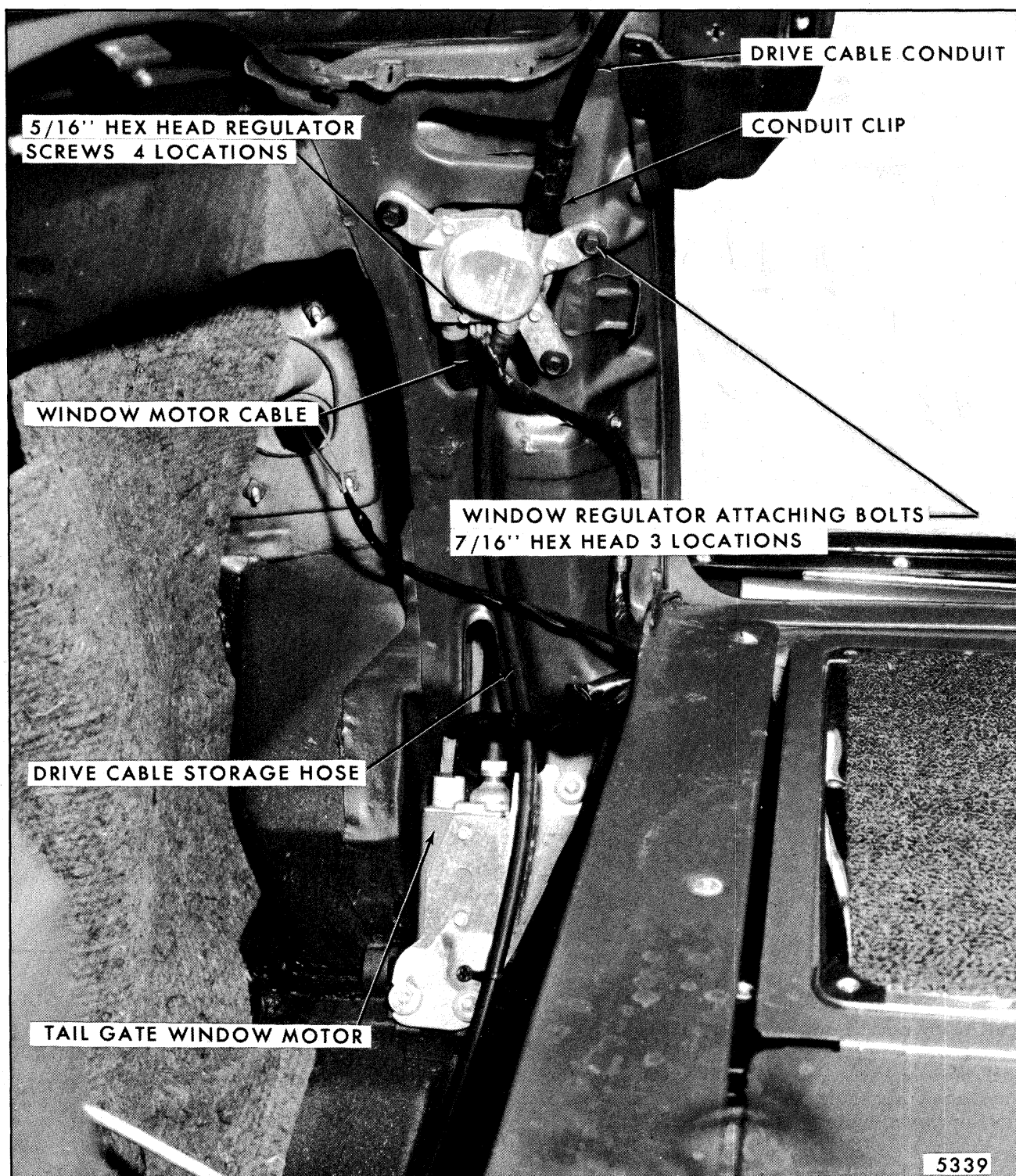


Fig. 7-124-Tailgate Window Motor and Regulator Installation

TAILGATE WINDOW GUIDE CAM - RIGHT OR LEFT SIDE

Description

The window operates within a cam type guide on each side of the body (Fig. 7-111). The left hand guide consists of a cam and attaching provisions. The right hand guide includes a cam, attaching provisions, an additional channel adjacent to the cam for the window drive cable and safety provisions specific to the manual tailgate. Each guide is concealed at the pillar locations by pillar finishing moldings and inner filler strips. The forward end of each guide extends into the space between the roof inner and outer panels.

Removal and Installation

1. Raise tailgate window and lower tailgate. On manual gates, snap tailgate lock to closed position.
2. Remove rear body pillar finishing moldings, right pillar inner filler strip, right quarter window upper garnish molding (left side also if left guide cam is to be removed) and body opening upper finishing molding and filler strip.
3. Detach back body opening weatherstrip sculptured belt detail sections and tape to body exterior as previously described (Fig. 7-119).
4. Detach headlining over quarter glass on right side (left side also if left guide cam is to be removed) sufficiently to reveal access hole at forward attaching location of window guide cam (Fig. 7-127).
5. Through access hole described in step 4, transfer window assist spring from retainer on window guide cam to hook on window right upper roller support (Fig. 7-126).
6. Through same access hole, remove drive cable flag retainer bolt and move flag retainer inboard out of engagement with flag. Secure flag in full forward position with a metal screw.
7. Lower window to point where glass right upper roller detent lever engages either of two notches in right guide cam (Figs. 7- 123 and 7-133).

NOTE: When drive cable flag is detached from right upper roller assembly, roller detent lever is released and will engage guide cam notches when glass is manually lowered.

8. Disengage roller detent lever at guide cam notches and lower glass to down-travel stop(s).

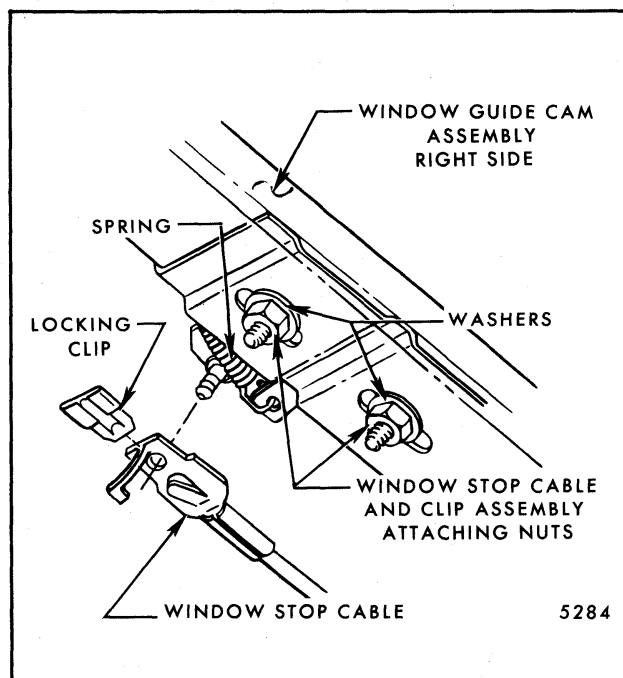


Fig. 7-125-Window Stop Cable and Clip Assembly Attachment

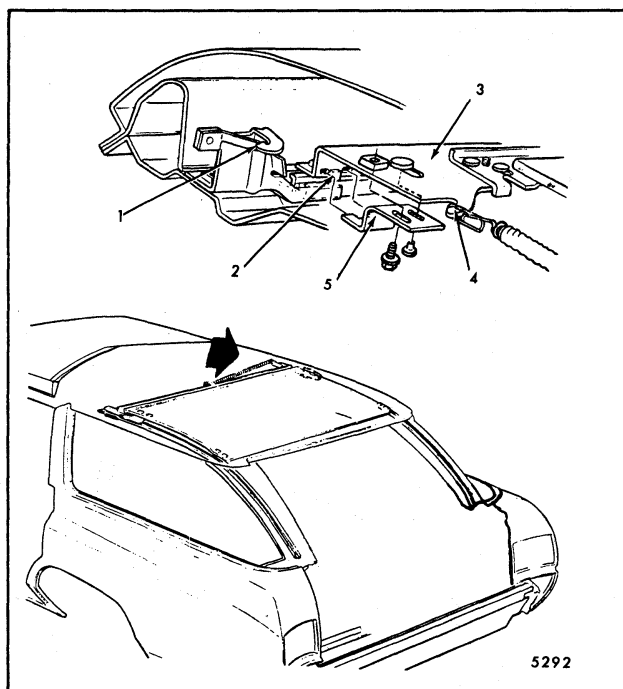


Fig. 7-126-Drive Cable Flag Retainer and Window Lift Spring Details

- | | |
|--|---|
| 1. Window Lift Spring Retainer on Guide Cam (Operating Position) | 4. Window Lift Spring Hook on Roller Assembly (Position for Window Removal) |
| 2. Drive Cable Flag | 5. Drive Cable Flag Retainer (Not Removable) |
| 3. Window Guide Roller Assembly | |

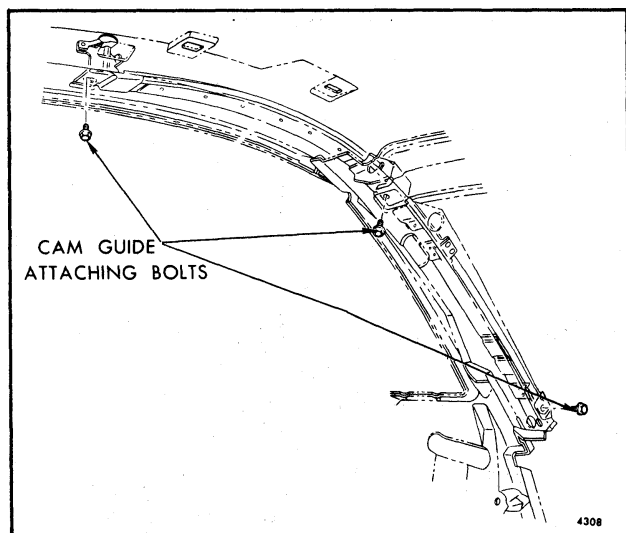


Fig. 7-127-Tailgate Window Right Guide Cam Attachment

9. While supporting glass, remove down-travel stop(s) and remove glass.
10. For removal of right guide cam, detach and remove window regulator as previously described. Remove guide cam attaching bolts, move guide assembly forward to clear pillar access hole with drive cable and withdraw guide from body (Fig. 7-127).

NOTE: On styles equipped with a manual tailgate disengage upper end of window stop cable and clip assembly prior to removing guide attaching bolts (Fig. 7-125).

11. For removal of left guide cam, remove guide attaching screws and withdraw guide from body (Fig. 7-128).

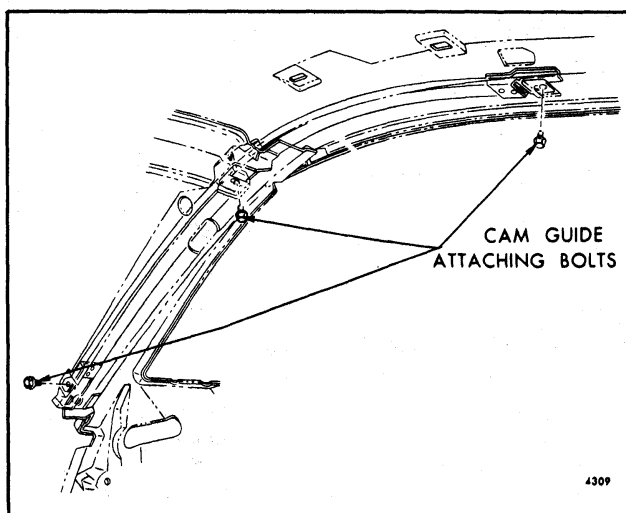


Fig. 7-128-Tailgate Window Left Guide Cam Attachment

12. To install either guide, reverse removal procedure.

TAILGATE WINDOW DRIVE CABLE

Description

The window drive cable consists of a stranded wire core with an integral spiral wire exterior. The spiralled character of the cable surface meshes with the rubber-coupled gear drive of the window regulator resulting in fore-aft motion of the drive cable. The cable is confined within a channel of the right guide cam from the guide forward end to the cable-to-guide cam attaching bracket (View "B", Fig. 7-133). From this point rearward to the regulator the cable passes through a conduit for routing under the guide cam and into the back body pillar. The forward end of the drive cable includes a metal tab (or flag) by which attachment to the glass hardware is made.

Removal and Installation

1. Remove spare tire cover, spare tire, right pillar finishing molding and inner filler strip.
2. Remove three regulator to pillar attaching bolts (Fig. 7-124).
3. Remove four 5/16 hex head screws from regulator and separate regulator halves (Fig. 7-129). Do not lose washers inside regulator.
4. Manually push window to full up position and open tailgate if not previously opened.
5. Disengage window drive cable conduit from top of regulator and pull cable from regulator.
6. Remove two bolts securing cable conduit to guide cam and work conduit down pillar as far as possible and pull cable from conduit (Fig. 7-130).
7. Fully lower tailgate window by pulling on loose end of drive cable, and/or tailgate glass.

Prior to lowering window on manual tailgate styles, lock tailgate lock with screwdriver or similar tool so that window will bypass stop cable and clip assembly.

NOTE: If guide roller detent lever engages into notches of guide cam, it will prevent window from fully lowering. To release window, depress detent lever outboard as shown in Figure 7-131 to bypass cam guide notches.

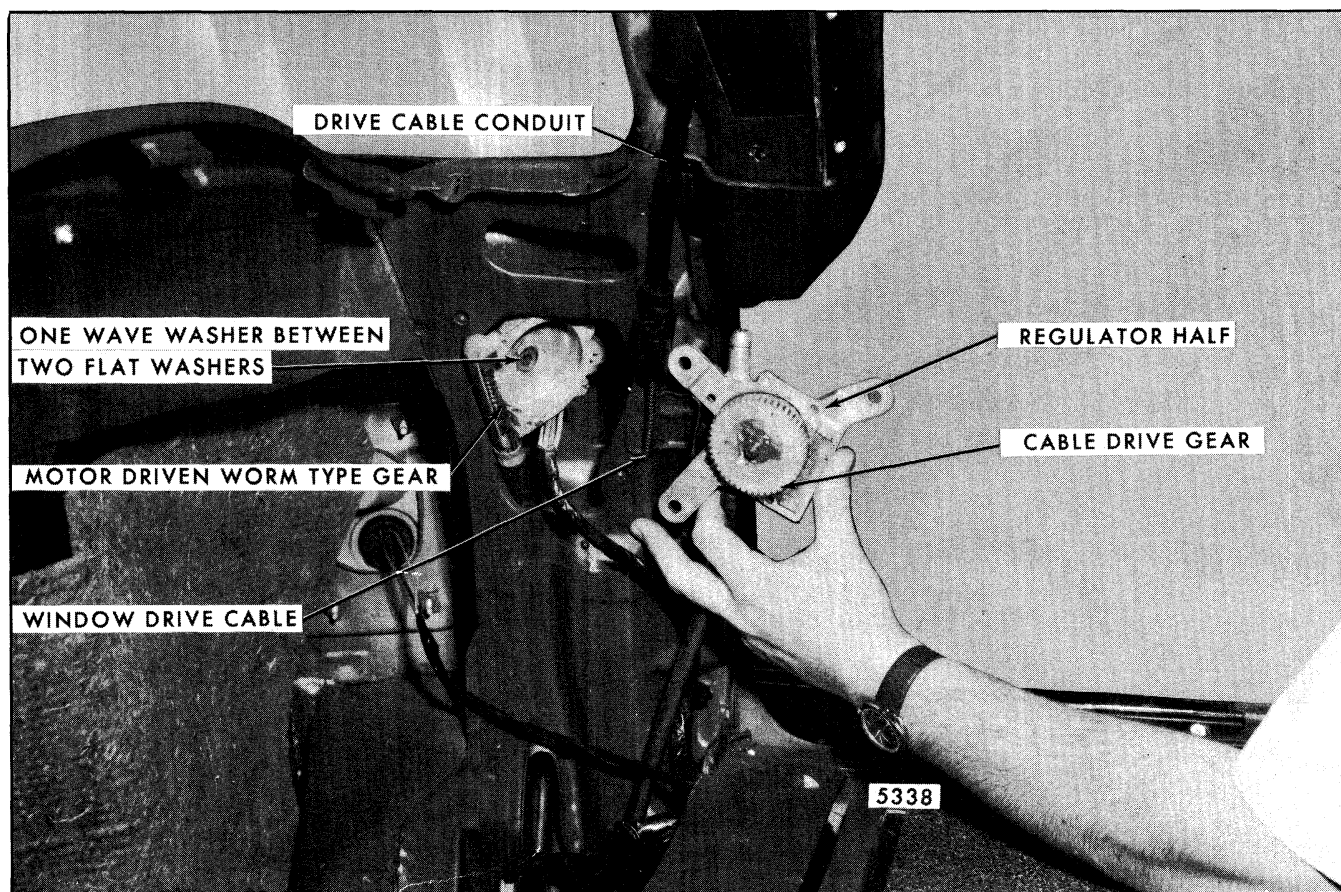


Fig. 7-129-Window Regulator Separated

8. Remove drive cable flag retainer bolt and withdraw retainer.
9. Using diagonal pliers (side cutters) cut and/or break long finger from lower tab of drive cable flag retainer as shown in Figure 7-132.
10. Pull cable from guide cam drive cable channel.
11. To install, reverse removal procedure. To start cable into assembled regulator, insert lower end of window drive cable into top of regulator and momentarily actuate quarter control key to the window "close" position. This will draw the cable into the regulator.

WINDOW STOP CABLE AND CLIP ASSEMBLY - (Manual Tailgate Only)

Description

The window stop cable and clip assembly is designed to prevent full lowering of the tailgate window (ap-

proximately 8" above the beltline) until the tailgate is fully closed (View "C", Fig. 7- 133). In addition, this assembly prevents mechanical release of the tailgate until the window is raised approximately 8" above the beltline. This feature is not required with the power tailgate option.

Removal and Installation

1. Remove window right guide cam as previously described.
2. Remove spring and nuts from stop assembly as a bench operation.

NOTE: Spring is used to self locate stop assembly on guide cam during adjustment.

3. Through access hole at window regulator mounting area disengage window stop cable at lock lever and withdraw cable. (See Fig. 7-146 window and gate control section).

NOTE: Tie a suitable length of cord to lower end of cable to facilitate installation.

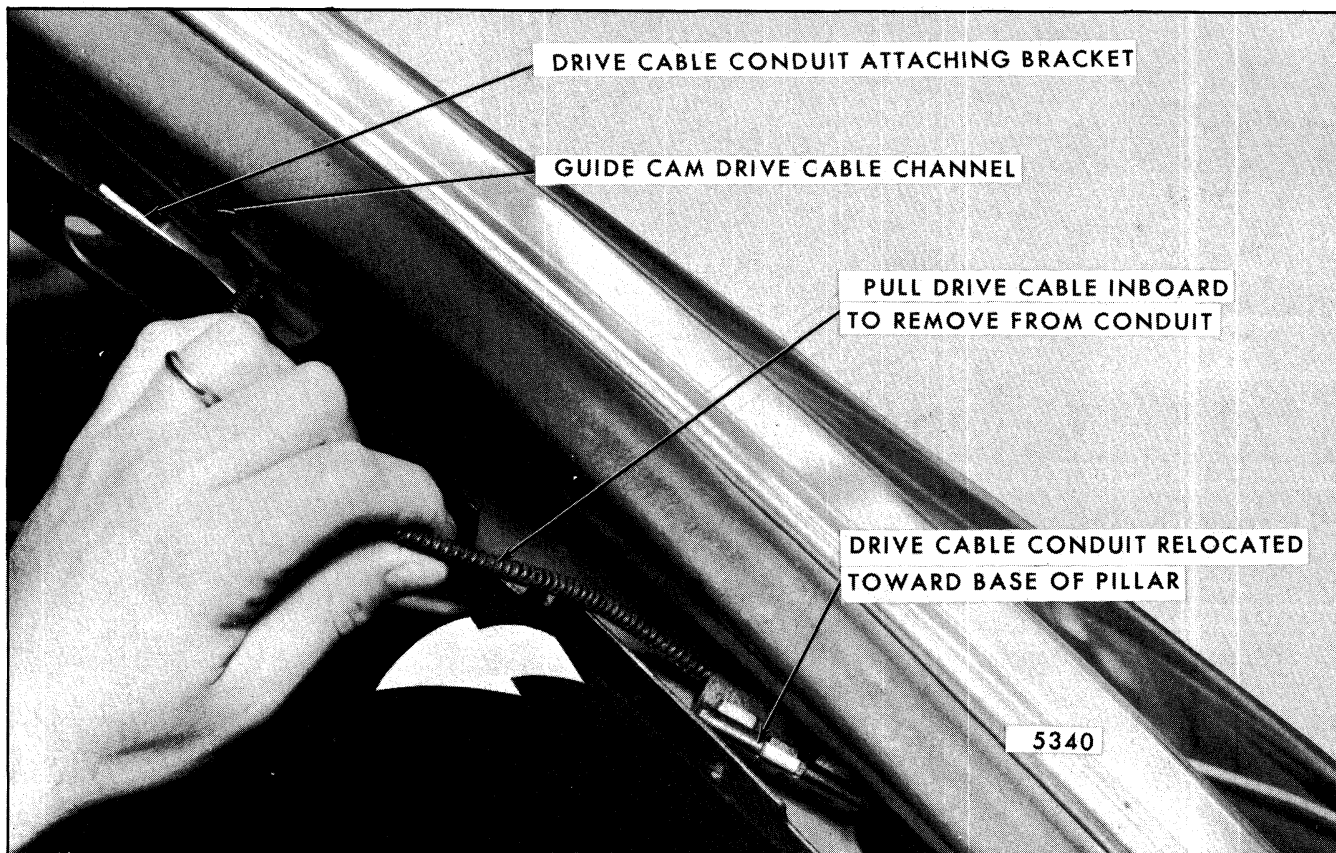


Fig. 7-130-Removing Cable from Conduit

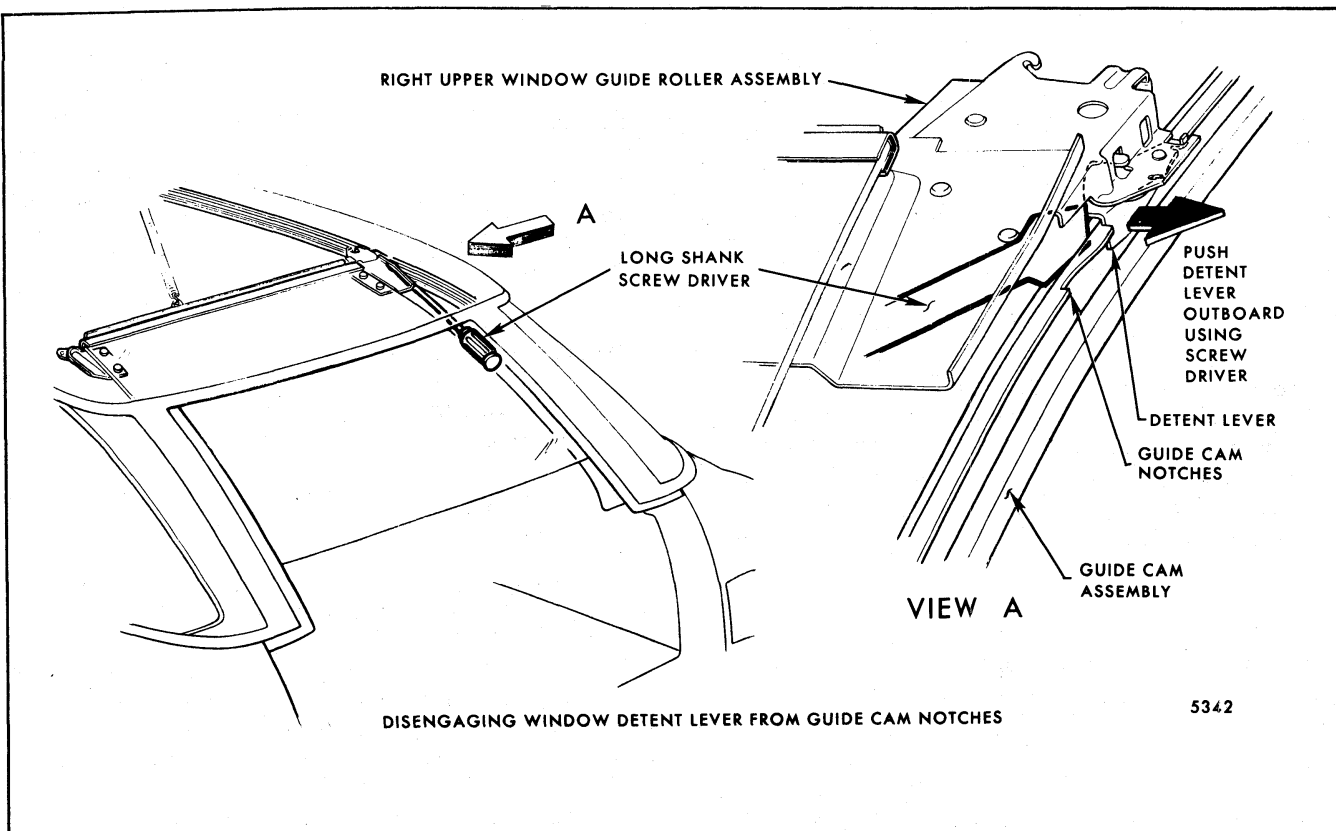


Fig. 7-131-Window Detent Lever Disengagement

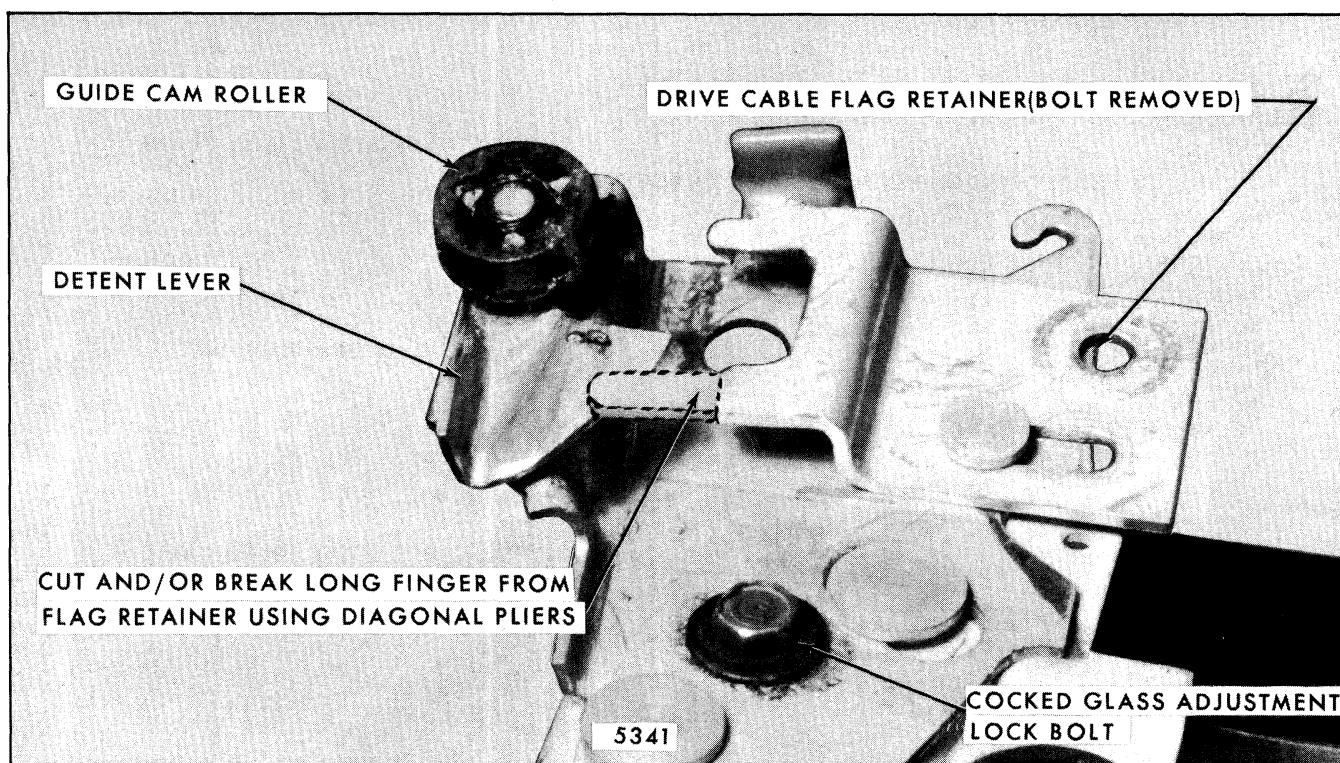


Fig. 7-132-Removing Long Finger from Flag

4. To replace cable and stop assembly, reverse the removal procedure.

NOTE: Tighten stop assembly at rearward end of slots in guide cam to facilitate installation of stop cable.

Adjustment

1. Manually trip tailgate lock fork bolt to the locked position with screwdriver or similar tool.
2. Position tailgate window downward until the midpoint of the right lower window guide roller assembly extension aligns with the tailgate window stop assembly pivot pin (Fig. 7-134).
3. Loosen tailgate window stop assembly attaching nut and allow spring to position assembly upward so that the bell crank dowel rests against the guide roller extension as shown in Figure 7-134.
4. Tighten both tailgate window stop assembly attaching nuts.
5. Raise tailgate window and actuate tailgate release knob on quarter panel to unlock tailgate lock.

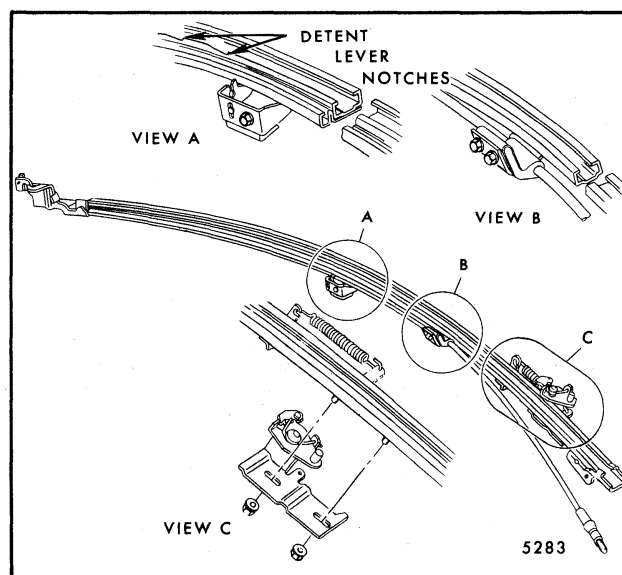


Fig. 7-133-Window Right Guide Cam and Drive Cable Details

- | | |
|--|--|
| A. Right Guide Cam Center Attachment | C. Window Stop Cable and Clip Assembly-to-Guide Cam Attachment |
| B. Window Drive Cable-to-Guide Cam Attaching Bracket | |

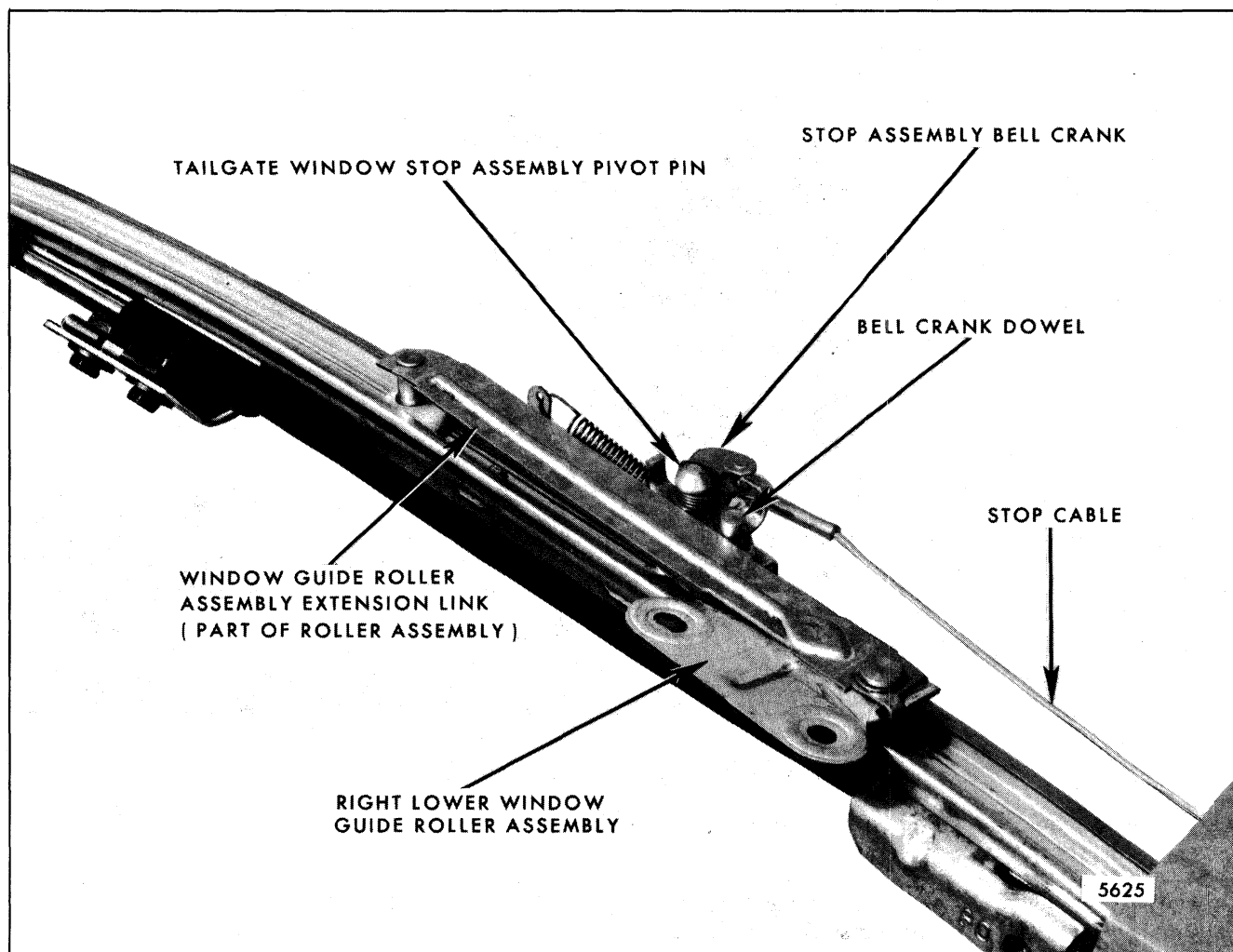


Fig. 7-134-Window Stop Cable and Clip Assembly Adjustment

6. Operate glass with tailgate lock in both locked and unlocked positions to check operation of stop cable and clip assembly. Window stop cable and clip assembly should be adjusted to function as follows:
 - a. Control knob on body exterior should not release tailgate until window raises sufficiently to clear bell crank on stop cable and clip assembly (approximately 8" above belt-line).
 - b. With tailgate open, window should contact bell crank pin on stop cable and clip assembly approximately 8" above beltline when lowered with instrument panel switch.

ROLLER ASSEMBLY - TAILGATE WINDOW

Description

A roller assembly is used at each corner of the glass to control the path of travel along the window guide cams (Fig. 7- 122). The left side rollers are staked to pivots and follow the path established by the right side roller assemblies which are non-pivoting. Two right hand lower roller assemblies are required, one for the manual tailgate and another for power tailgates. The right hand upper roller also assumes a fixed position, but includes an adjustable roller plate for a cocked glass correction.

Removal and Installation

1. Remove tailgate window as previously described.
2. Remove roller assembly as a bench operation (Fig. 7-122).
3. To install, reverse removal procedure.

NOTE: Torque roller assembly to glass attaching bolts to 72 inch- pounds.

TAILGATE WINDOW DOWN-TRAVEL STOP(S)

Description

The tailgate window down-travel stops provide positive limits for glass contact to the tailgate belt weatherstrip (Fig. 7-121). One stop only is required on the right side for units equipped with the manual tailgate. Two stops (right and left) are required for power tailgate application.

Removal and Installation

1. Remove rear pillar finishing molding (both sides for power gate; right side only for manual gate).
2. Remove down-travel stop attaching screw in lower end of window cam guide and remove stop(s) (Fig. 7-121).
3. To install, reverse removal procedure. Adjust stop(s) as subsequently explained.

Adjustment

1. Loosen down-travel stop attaching screw and lower tailgate window for desired contact with tailgate belt weatherstrip.
2. From body interior, adjust down-travel stop upward for firm contact against glass lower roller and tighten stop attaching screw. Make minor adjustments if required (Fig. 7-121).

TAILGATE WINDOW ASSIST SPRING AND SILENCER

Removal and Installation

1. Remove back body opening upper finishing molding and filler strip (Fig. 7-116).

2. Remove right quarter glass upper garnish molding.
3. Detach headlining over quarter glass on right side sufficiently to reveal access hole at forward attaching location of window guide cam (Fig. 7-126).
4. With glass in down position detach spring from window upper sash channel and move spring to right side of body to relax spring tension (Fig. 7-120).
5. Through access hole in roof inner panel detach spring from retainer on guide cam (Item "1", Fig. 7-126) and withdraw spring rearward from body.
6. To install, reverse removal procedure.

HEATED TAILGATE WINDOW REAR WIRE HARNESS ASSEMBLY

Description

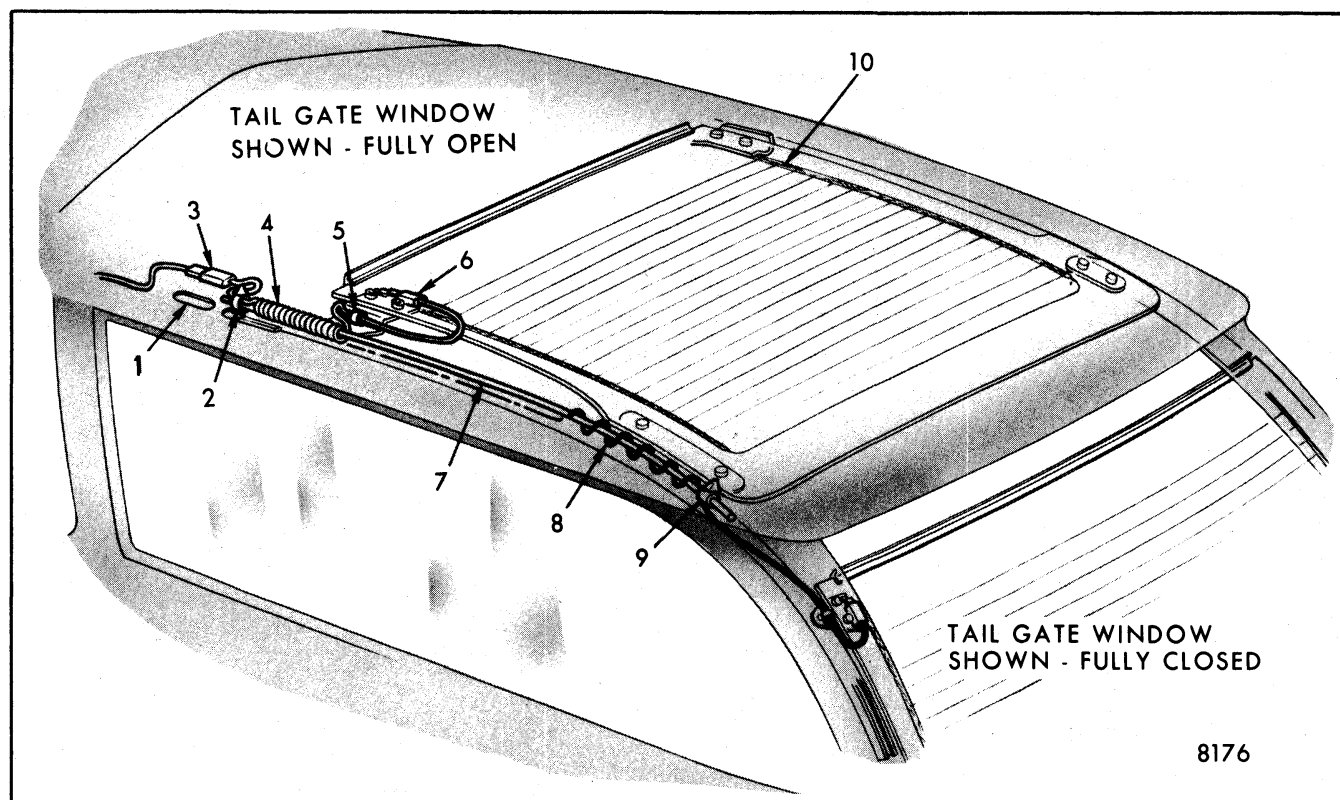
A coiled harness serves the heated window circuit requirements. This allows the harness to extend when the window is closed and recoil when the window is raised (Fig. 7-135). A plastic tube integral with the harness guides the harness during recoil.

Removal and Installation

1. Remove back body opening upper trim finishing molding and inner filler strip (Fig. 7-116).
2. Remove left rear pillar finishing molding and inner filler strip.
3. Remove left quarter window upper garnish molding and detach headlining over left quarter glass sufficiently to reveal access hole at forward end of tailgate window left guide cam.
4. Disengage heated window rear harness at front junction and secure a 4 foot cord to harness to facilitate installation (Fig. 7-135).
5. Lower tailgate window to full down position for access to harness terminal on glass.

NOTE: On manual gates, snap tailgate lock to closed position in order to lower window fully.

6. Withdraw harness from body leaving installing cord in body cavity.
7. To install, reverse removal procedure.



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Fig. 7-135-Heated Tailgate Window Harness Installation

- | | | | |
|---|--|---|--|
| 1. Roof Panel Access Hole | 4. Feed Harness - Coiled Onto Hollow Plastic Guide Tube | 6. Feed Harness to Bus Bar Connector | 9. Guide Tube Secured To Roof Inner Panel |
| 2. Rosebud Fastener - Secure Tube And Harness To Roof Inner Panel | 5. Rosebud Fastener Secure Harness To Left Upper Roller Assembly | 7. Hollow Plastic Guide Tube - Used To Guide Harness Coil | 10. Ground Wire Secured to Right Upper Roller Assembly |
| 3. Heated Window Feed Harness Connectors | | 8. Feed Harness - Uncoiled Along Hollow Guide Tube | |

RETRACTABLE TAILGATE WINDOW DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Window cannot be raised. Window motor operative.	<p>1. Window motor cable disconnected or broken.</p> <p>2. Possible inoperative window regulator or disconnected or broken window drive cable.</p>	<p>(A) Check window motor drive cable. Re-connect or replace.</p> <p>(A) Detach window drive cable storage conduit from regulator to expose drive cable. With helper actuating window switch for "up" cycle, observe exposed drive cable for movement. If no movement occurs, remove regulator and disassemble for inspection.</p> <p>(B) If cable movement occurs in above test at regulator, repeat test while observing upper (flag) end of drive cable at glass right upper roller assembly. This will determine whether drive cable is disconnected or broken.</p>
2. Window cannot be lowered. Window motor operative.	<p>1. Window motor cable disconnected or broken.</p> <p>2. Possible inoperative window regulator, disconnected or broken window drive cable.</p>	<p>(A) Check window motor cable. Reconnect or replace.</p> <p>(A) Detach window drive cable storage conduit from regulator. With helper actuating window switch for "down" cycle, observe if drive cable exits lower end of regulator. If drive cable appears, drive cable is disconnected at window upper roller or cable is broken. Re-connect or replace cable.</p> <p>(B) If drive cable does not appear, grasp window and attempt manual lowering. If window lowers and cable exits at lower end of regulator, remove regulator and disassemble for inspection</p>

RETRACTABLE TAILGATE WINDOW DIAGNOSIS CHART (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
3. Window cannot be lowered. Window motor operative. Window regulator noisy.	1. Window drive cable out of engagement with regulator drive gear.	(A) Attempt manual lowering of window sufficiently to cause engagement of window drive cable in regulator. If engagement occurs, check window up-travel stop on window right guide cam or check length of drive cable. (B) If engagement of cable does not occur, check cable flag to window upper right roller attachment or remove and disassemble regulator for inspection.
4. Window cannot be raised or lowered. Window motor inoperative.	1. Possible lock and release switch malfunction. 2. Possible window electrical circuit problem.	(A) Refer Window and Tailgate Control System Diagnosis Chart. (A) Refer Electrical Section for Tailgate Window Circuit Diagnosis.
5. Window lowers fully with tailgate open or tailgate releases before window raises beyond 8" above belt. (Manual tailgate)	1. Stop cable and clip assembly out of adjustment on right guide cam. 2. Cable of above assembly disconnected at either end or broken.	(A) Align stop cable and clip assembly. (A) Reconnect cable or replace cable if broken.

TAILGATE SYSTEM

Description

The tailgate lowers into a storage area beneath the load floor and is guided through the path of its travel by right and left lower guide channel assemblies and a regulator lift arm and hinge at the upper left corner. Simultaneous movement of right and left sides is assured by a synchronizing torque tube assembly.

Operating effort is reduced by a torque rod assembly that acts upon the regulator lift arm and hinge (Fig. 7-140).

TAILGATE ASSEMBLY

Description

The tailgate assembly is fabricated primarily of an

inner and an outer panel with reinforcements provided at critical attachment locations. Since the tailgate window is independent of the gate, no hardware is required within the assembly. A single opening is provided at the right upper area of the tailgate inner panel for access to the striker attachment provisions (Fig. 7-142). A grip handle is provided at center of the beltline on manual tailgates only.

Removal and Installation

NOTE: Refer to Figure 7-136 and prepare a 1/4" 20 x 1" fixture bolt to serve as a roller stop for subsequent removal steps. In addition, tape a doubled fender cover or equivalent to upper surface of bumper face bar to protect gate.

1. Raise tailgate to latched position and remove left side tailgate access hole cover.

WARNING: MAINTAIN A FIRM GRIP ON TAILGATE FOR SUBSEQUENT STEPS.

2. Remove regulator hinge arm-to-tailgate attaching screws. On manual tailgates, actuate control knob to unlock gate. Lower gate sufficiently to clear lock assembly and allow gate to pivot rearward approximately 45 degrees.
3. Insert fixture bolt and nut assembly into key slot at upper end of right channel guide assembly below roller to hold synchronizing tube assembly in position during tailgate removal (Fig. 7-136).
4. Scribe location of right lower roller support on tailgate and remove attaching bolts.
5. Move right side of tailgate rearward sufficiently to clear body opening. Then slide tailgate to right and out of engagement with left torque roller shaft to remove tailgate.
6. To install, reverse removal procedure.

NOTE: Remove fixture bolt from right channel assembly before raising tailgate to body position.

TAILGATE GUIDE CHANNEL ASSEMBLY - RIGHT OR LEFT

Description

The tailgate guide channels, right and left, are mounted in the back body lower housing and establish path of travel for the tailgate (Fig. 7-139). Each guide channel assembly consists of a curved channel

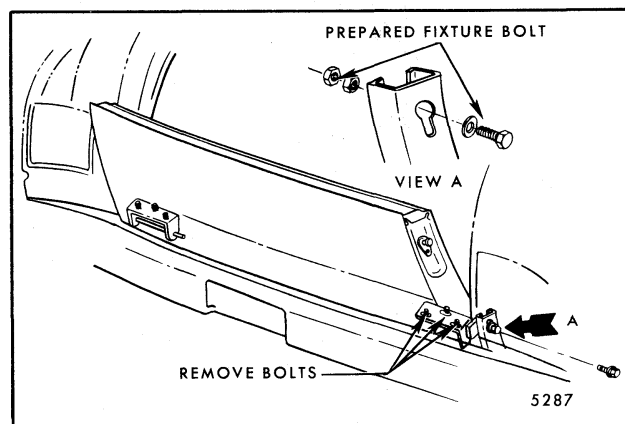


Fig. 7-136-Tailgate Position For Removal

and mounting brackets. A pivot link is used at the rear of each assembly to accommodate the synchronizing torque tube. The guide channel bracket attaching holes are elongated to provide fore-aft adjustment for the lower portion of the gate (Figs. 7-116 and 7-139).

Removal and Installation

1. Remove tailgate as previously described.
2. Working through opening between body and rear bumper, remove synchronizing tube-to-guide channel link shoulder bolt (Fig. 7-137 or 7-138).
3. Remove guide channel-to-body attaching bolts.
4. Disengage guide channel from tailgate lower roller and withdraw guide channel through opening between body and rear bumper.

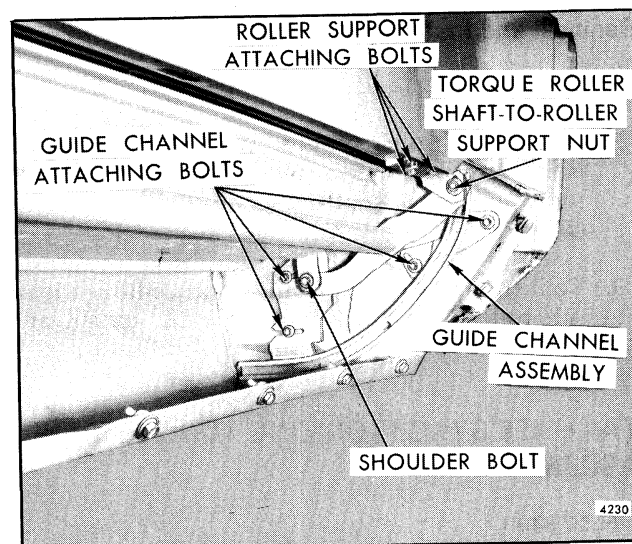


Fig. 7-137-Tailgate Guide Channel Assembly - Right

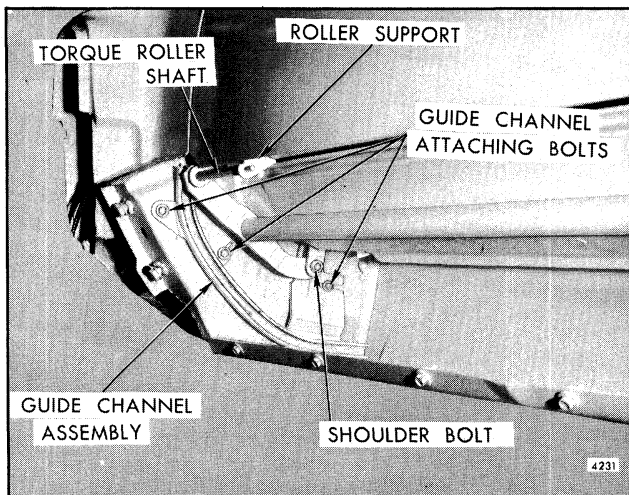


Fig. 7-138-Tailgate Guide Channel Assembly - Left

5. To install, reverse removal procedure. Adjust guide channel fore or aft as required.

TAILGATE ROLLER SUPPORT - RIGHT OR LEFT

Description

A torque roller and shaft assembly engages the guide channel on each side of the body. The torque rollers and shafts in turn are connected to the bottom of the tailgate by torque roller supports. The left torque roller support is mounted to a fixed location on the bottom of the tailgate. The right torque roller support is adjustable laterally with respect to the gate in order to allow cross-body adjustment of the gate. Additionally, the right torque roller support-to-roller shaft attaching hole is elongated vertically to provide a cocked tailgate adjustment (Fig. 7-137).

Removal and Installation

1. Remove tailgate as previously described.
2. Remove left roller support as a bench operation. Remove right roller support from body by removing roller shaft-to-support attaching nut (Fig. 7-137).
3. To install, reverse the removal procedure. Right side roller only is adjustable laterally on tailgate and up-down on roller shaft.

TAILGATE SYNCHRONIZING TORQUE TUBE ASSEMBLY

Description

A synchronizing torque tube assembly assures level

operation of the tailgate through opening and closing cycles. An arm on each end of the tube connects to a torque roller at the bottom of the tailgate (each side). The opposite end of the arm is connected to the guide channel link by a shoulder bolt (Figs. 7-111 and 7-139).

Removal and Installation

1. Remove tailgate as previously explained.
2. Remove right and left synchronizing torque tube-to-guide channel link shoulder bolts (Fig. 7-139).
3. Scribe location of guide channels on body and remove rearward attaching bolts and loosen forward attaching bolts.
4. Rotate guide channels downward at rear for clearance to allow disengagement of right and left torque rollers from upper end of guide channels.
5. Remove synchronizing torque tube with torque rollers and shafts and right roller support intact.
6. If necessary, torque rollers and shafts and right roller support may be removed as a bench operation.
7. To install, reverse removal procedure.

TAILGATE TORQUE ROD

Description

The retractable tailgate torque rod provides a counterbalance force for the operating cycles of the gate resulting in decreased opening and closing effort. The adjustable end of the torque rod is located on the right side of the body under the rear load supports and is secured in one of three adjusting locations by a pin inserted above the rod and through a key slot in the torque rod retainer (Fig. 7-141).

Removal and Installation

1. Lower tailgate and prop rear load floor in full open position.
2. Remove load floor supports to gain access to torque rod retainer and with tool J-23719 or equivalent, apply downward pressure on torque rod. Carefully remove torque rod pin and allow torque rod to rotate forward to a fully relaxed position (Fig. 7-141).

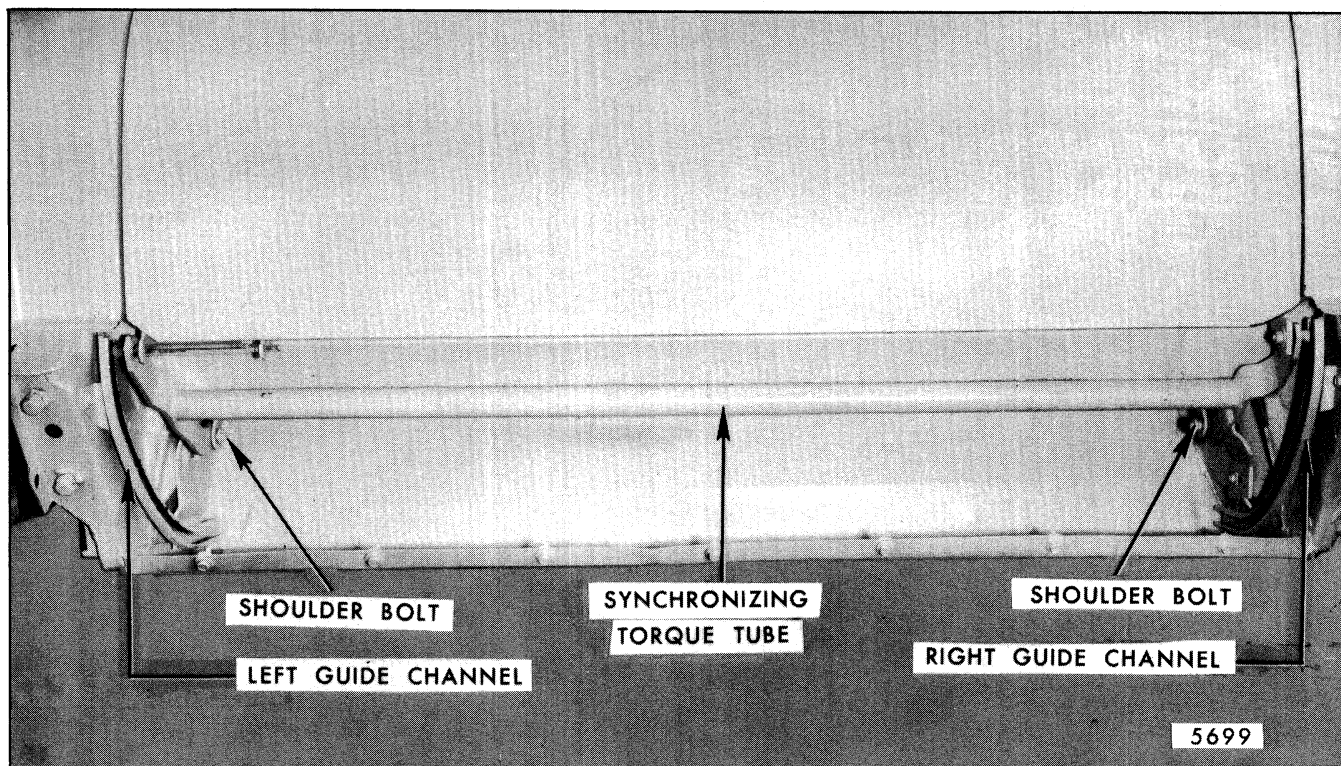


Fig. 7-139-Tailgate Synchronizing Torque Tube and Guide Channels

WARNING: DO NOT REMOVE TORQUE ROD COVER PLATE UNTIL TORQUE ROD TENSION IS FULLY RELIEVED.

3. Remove torque rod cover plate screws and remove cover plate (Fig. 7-140).
4. Withdraw torque rod from lift arm link and remove torque rod from body.
5. To install, reverse removal procedure.

Adjustment

1. Engage end of torque rod with tool J-23719 or

equivalent, apply downward pressure against rod and remove retaining pin (Fig. 7-141).

2. Place torque rod in desired location in torque rod retainer and insert retaining pin in key slot above torque rod.

NOTE: Torque rod should be adjusted to achieve tailgate cycling action that requires only minimal manual assist.

3. On manual tailgates adjust tailgate drop adjusting screw (Fig. 7-140) if necessary, so that tailgate drops 3 to 6 inches after being released by the control knob.

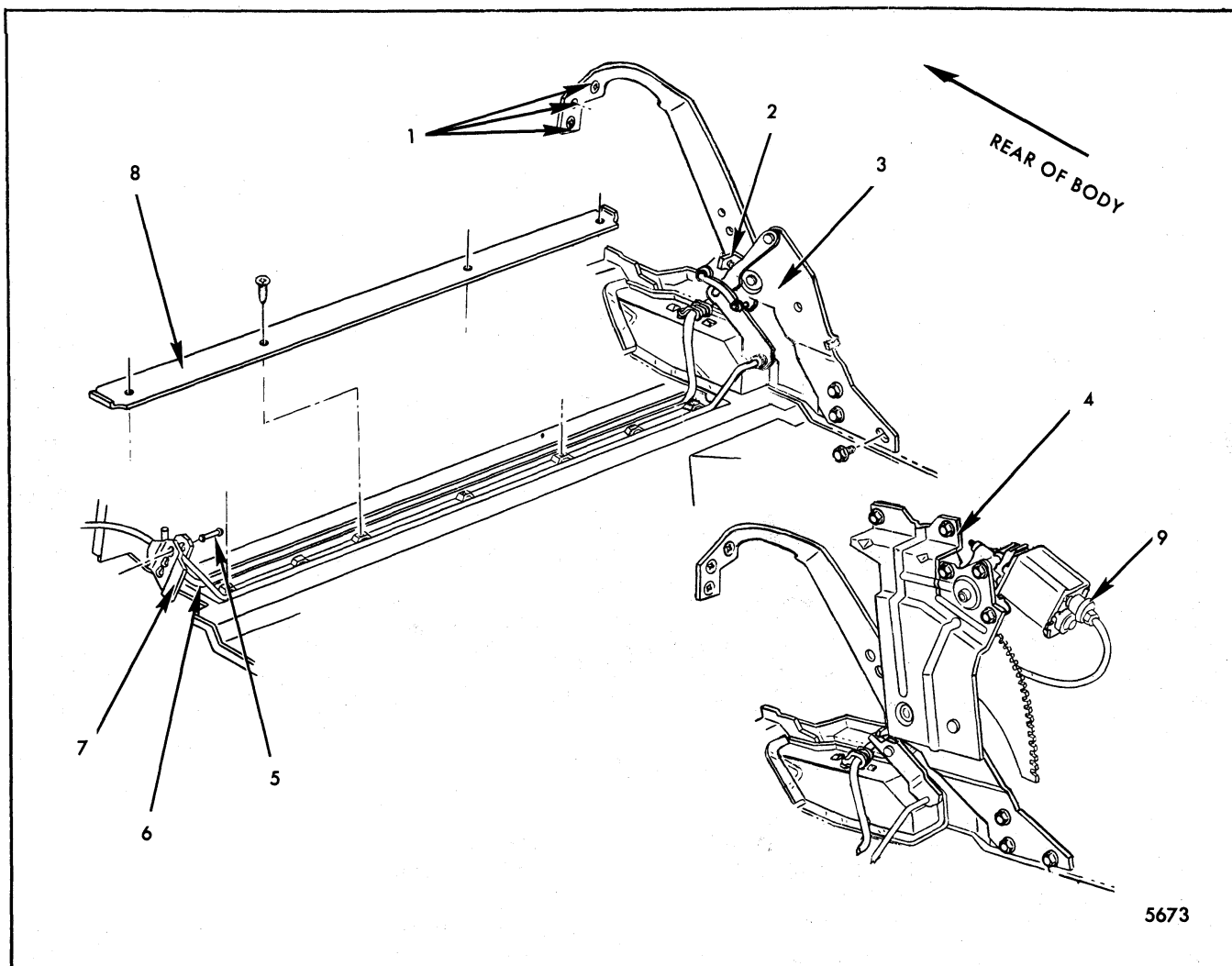


Fig. 7-140-Tailgate Torque Rod and Hinge Arm Relationship

- | | | | |
|--|---|--------------------------------|--|
| 1. Lift Arm
Hinge-to-Tailgate
Attaching Screws | 3. Lift Arm Hinge
Assembly - Manual | 5. Torque Rod Retaining
Pin | 8. Torque Rod Cover
Plate |
| 2. Tailgate Drop
Adjusting Screw | 4. Lift Arm Hinge and
Regulator Assembly -
Electric | 6. Torque Rod | 9. Tailgate Motor
Harness Connector |
| | 7. Torque Rod Retainer | | |

RETRACTABLE TAILGATE DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. With window open, manual tailgate will not release from closed position.	1. Swivel on switch pawl-to-lock lever rod positioned too high on link.	(A) Adjust swivel down on rod sufficiently to trip lock lever.
	2. Swivel on switch pawl-to-lock lever rod disconnected at lock lever.	(A) Check swivel adjustment and condition of retaining clip on lock lever. Reconnect swivel.

RETRACTABLE TAILGATE DIAGNOSIS CHART (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
2. With window open, manual tailgate releases but will not drop sufficiently to clear lock.	1. Tailgate drop adjusting screw positioned improperly.	(A) Position tailgate drop adjusting screw so that tailgate drops 3 to 6 inches when released.
3. Manual tailgate requires excessive effort to raise.	1. Torque rod improperly adjusted.	(A) Adjust torque rod down in retainer to reduce manual effort.
4. Power tailgate operates from only one of two control switches.	1. Possible defective switch. 2. Possible tailgate circuit problem to affected switch.	(A) Check switch. Refer to checking procedures in tailgate portion of Electrical Section. (A) Check circuit. Refer Electrical Section as above.
5. Power tailgate will not operate from either of two control switches.	1. Possible defective motor. 2. Possible tailgate electrical circuit problem.	(A) Check motor and/or tailgate electrical circuit. Refer Electrical Section.

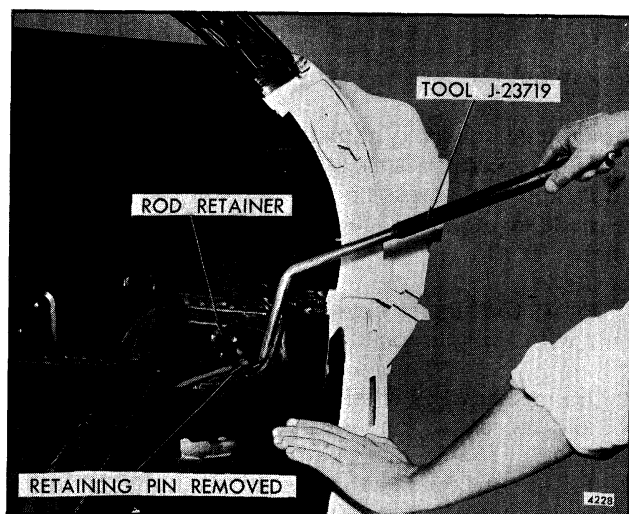


Fig. 7-141-Torque Rod Tool - Torque Rod Release or Adjustment

TAILGATE LIFT ARM HINGE ASSEMBLY - MANUAL AND ELECTRIC

Description

A lift arm and hinge assembly is mounted to the left quarter inner construction and to the left upper inner corner of the gate to provide raising and lowering effort. For power operated tailgates a motor and sector are added to the assembly. The assembly mounting holes are elongated to allow down-forward and aft-upward adjustment to the left side of the gate (Fig. 7-140).

Removal and Installation

1. Remove left quarter rear trim panel.
2. Remove tailgate left side access hole cover.
3. Remove regulator lift arm hinge-to-tailgate at-

attaching screws and carefully lower tailgate. On power-operated units, disconnect wire harness at motor terminal (Fig. 7-140).

4. Remove tailgate torque rod as previously explained.
5. Mark location of lift arm hinge assembly on body and remove attaching screws. Remove regulator and lift arm hinge assembly from body.
6. To install, reverse removal procedure.

Adjustments

The regulator and lift arm hinge assembly may be adjusted down-forward, aft-upward and rotated within the limitations of over-size attaching holes to the body.

NOTE: Make adjustments with torque rod disengaged at retainer on right side of body.

Assuming that all attaching bolts to body and tailgate are loose, proceed as follows:

1. Tighten regulator lift arm-to-tailgate attaching screws securely.
2. With tailgate in full closed position, move tailgate fore or aft to achieve flush tailgate to body opening alignment. Secure regulator attaching bolts.

NOTE: Loosening all regular attaching bolts except the forward lower bolt, will permit gate to be adjusted fore and aft (down position) without affecting flush fit in the closed position.

3. Secure torque rod in retainer, using tool J-23719 or equivalent, and operate gate through several up-down cycles. Repeat step 2 if necessary.

NOTE: On manual tailgates, if original location of regulator and hinge assembly is changed, the tailgate drop adjusting screw should be readjusted. (Refer to "Tailgate Torque Rod - Adjustment").

TAILGATE LIFT ARM HINGE AND REGULATOR ASSEMBLY MOTOR

Removal and Installation

1. With tailgate fully lowered, remove left quarter rear trim panel.
2. Detach wire harness at motor terminal and

remove motor-to-regulator attaching bolts. Remove motor (Fig. 7-140).

3. To install, reverse removal procedure.

TAILGATE STRIKER ASSEMBLY

Description

The tailgate striker assembly mounted on the right side of the gate provides fore-aft, up-down and cross-body adjustments. The assembly is designed to pivot from the lower attaching point so that fore-aft adjustment can be made without disturbing the height setting. Cross-body adjustment is made by loosening the striker pin jamb nut and turning the striker pin in the desired direction (Fig. 7-142).

Removal and Installation

1. Remove tailgate right side access hole cover as previously described.
2. Lower tailgate as far as possible without obscuring tailgate inner panel access hole.
3. Secure striker assembly on tailgate exterior with an extension magnet or looped cord.
4. Through access hole in tailgate inner panel, remove striker assembly nut and striker pin jamb nut and washer (Fig. 7-142).
5. Withdraw striker assembly through gap between tailgate and opening.
6. To install, reverse removal procedure.

Adjustments

The tailgate striker is adjustable up-down and fore-aft. The striker pin is threaded into the striker plate and is adjustable cross-body. All striker adjustments are made through the access hole in the tailgate inner panel.

To adjust the striker cross-body for proper engagement with tailgate lock, proceed as follows:

1. Engage hex end of striker with a suitable wrench and loosen striker pin jamb nut (Fig. 7-142).
2. Rotate striker pin for desired relationship with lock.
3. While holding hex end of striker in desired position, tighten striker pin jamb nut.

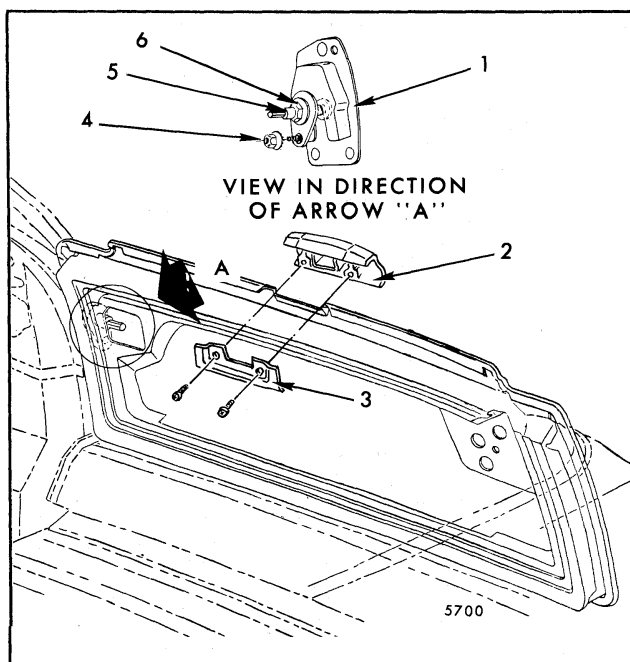


Fig. 7-142-Tailgate Lock Striker and Grip Handle Assemblies

- | | |
|----------------------|-------------------------|
| 1. Lock Assembly | 4. Striker Assembly Nut |
| 2. Grip Handle | 5. Striker Pin |
| 3. Grip Handle Cover | 6. Striker Pin Jamb Nut |

To adjust striker fore-aft or up-down, proceed as follows:

1. To achieve fore-aft adjustment only, loosen striker pin jamb nut while holding striker pin. Position striker and secure jamb nut.
2. For up-down adjustment loosen striker pin jamb nut and striker assembly nut. Position striker and tighten jamb nut and striker assembly nut.

TAILGATE LOCK ASSEMBLY

Removal and Installation

1. Raise tailgate window and lower tailgate.
2. For manual tailgates remove spare tire cover and spare tire.
3. Working around right pillar inner panel, disengage tailgate window stop cable and switch pawl rod at lock lever (Fig. 7-146).
4. For either manual or electric tailgates, remove lock attaching bolts at pillar facing and remove lock and lock lower guide (Fig. 7-145).
5. To install, reverse removal procedure.

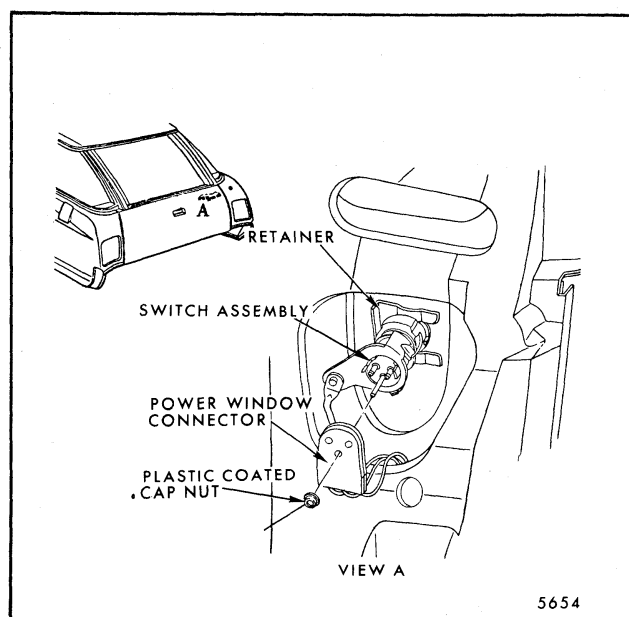


Fig. 7-143-Electric Window Switch Connector - Manual Tailgate

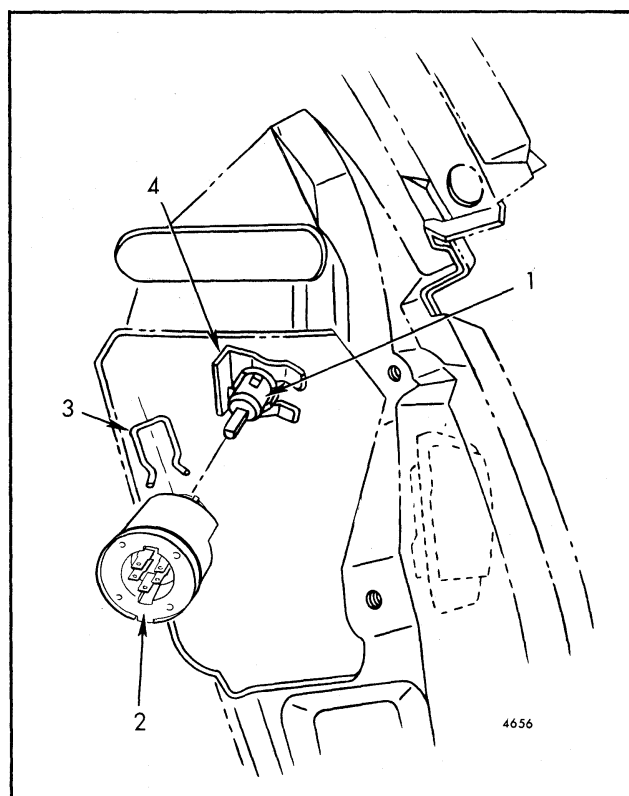


Fig. 7-144-Electric Window and Gate Switch Assembly

- | | |
|------------------------------------|--------------------------------------|
| 1. Lock Cylinder | 3. Switch-to-Cylinder Retaining Clip |
| 2. Electric Window and Gate Switch | 4. Lock Cylinder Retaining Clip |

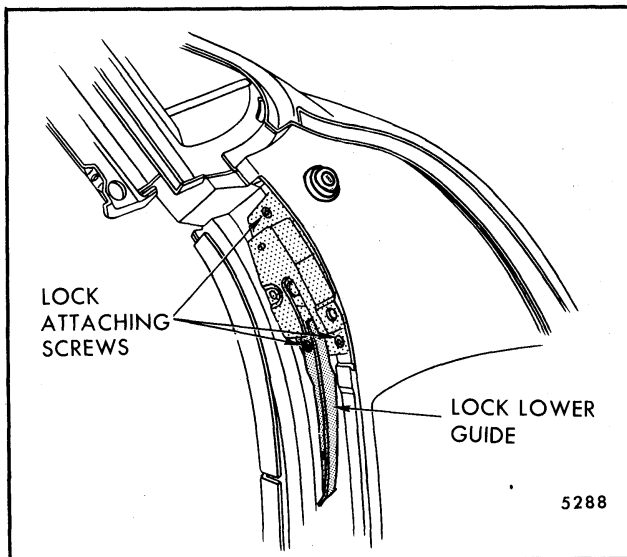


Fig. 7-145-Lock and Lock Lower Guide Attachment

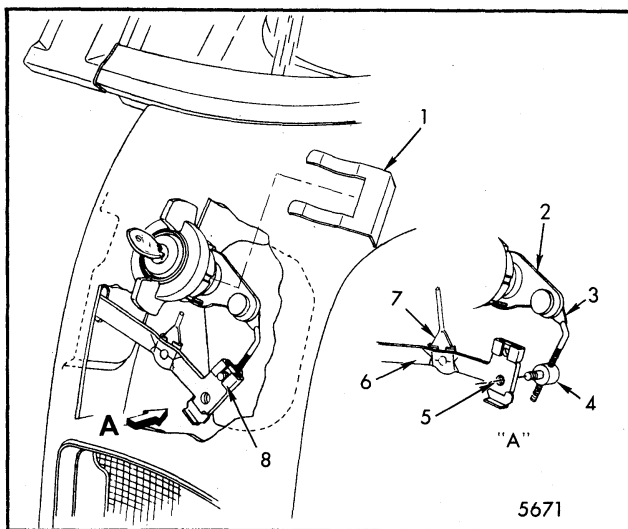


Fig. 7-146-Lock and Release Switch Assembly - Manual Gate

- | | |
|---|---|
| 1. Lock and Release Assembly Retaining Clip | 5. Lock Lever Pilot Hole |
| 2. Switch Pawl | 6. Lock Lever |
| 3. Pawl-to-Lock Lever Rod | 7. Cable - Stop Cable and Clip Assembly |
| 4. Swivel | 8. Swivel - Installed Position |

TAILGATE OUTER PANEL GRIP HANDLE - (Manual Tailgate Only)

Removal and Installation

1. Remove screws securing tailgate outer panel grip handle and cover. Remove handle (Fig. 7-142).

2. To install, reverse removal procedure.

TAILGATE ADJUSTMENTS

The retractable tailgate is adjustable up-down, fore-aft and laterally within its body opening (Fig. 7-147). All tailgate adjustments may be completed without removal of the rear bumper face bar and body rear upper housing. The covered openings in the body rear lower housing on each side (Fig. 7-117) provide access for adjustment provisions confined within the tailgate storage area.

WARNING: WHEN PERFORMING TAILGATE SERVICE OPERATIONS THROUGH THE ACCESS OPENINGS IN THE BODY REAR LOWER HOUSING (FIG. 7-117), PLACE BODY TAPE OVER THE TAILGATE OPERATING KEY CYLINDER OR RELEASE KNOBS TO PREVENT INADVERTENT LOWERING OF THE TAILGATE.

Up-down adjustment of the tailgate is controlled chiefly by the positioning of the tailgate striker assembly. To complete the up-down adjustment, proceed as follows:

1. With tailgate fully closed remove right side access hole cover panel for access to striker attaching provisions (Fig. 7-142).
2. Hold striker pin hex end and loosen striker jamb nut. Loosen striker assembly attaching nut.
3. Position tailgate to desired height, move striker assembly to full engagement with lock bolt and tighten striker assembly.

To correct a cocked tailgate condition, close tailgate and loosen striker assembly. Through access hole in body rear lower housing, loosen the right hand roller support-to-roller shaft nut (Fig. 7-137). Position tailgate and tighten subject nut. Complete striker assembly adjustment.

Fore-aft adjustment of the tailgate is attained by positioning the tailgate guide channel assemblies for correcting the bottom of the tailgate and/or positioning the striker assembly and regulator lift arm and hinge assembly for correcting the top of the tailgate.

To correct bottom of tailgate fore-aft proceed as follows:

1. With tailgate fully closed remove rear body lower housing access cover on affected side (Fig. 7-117).

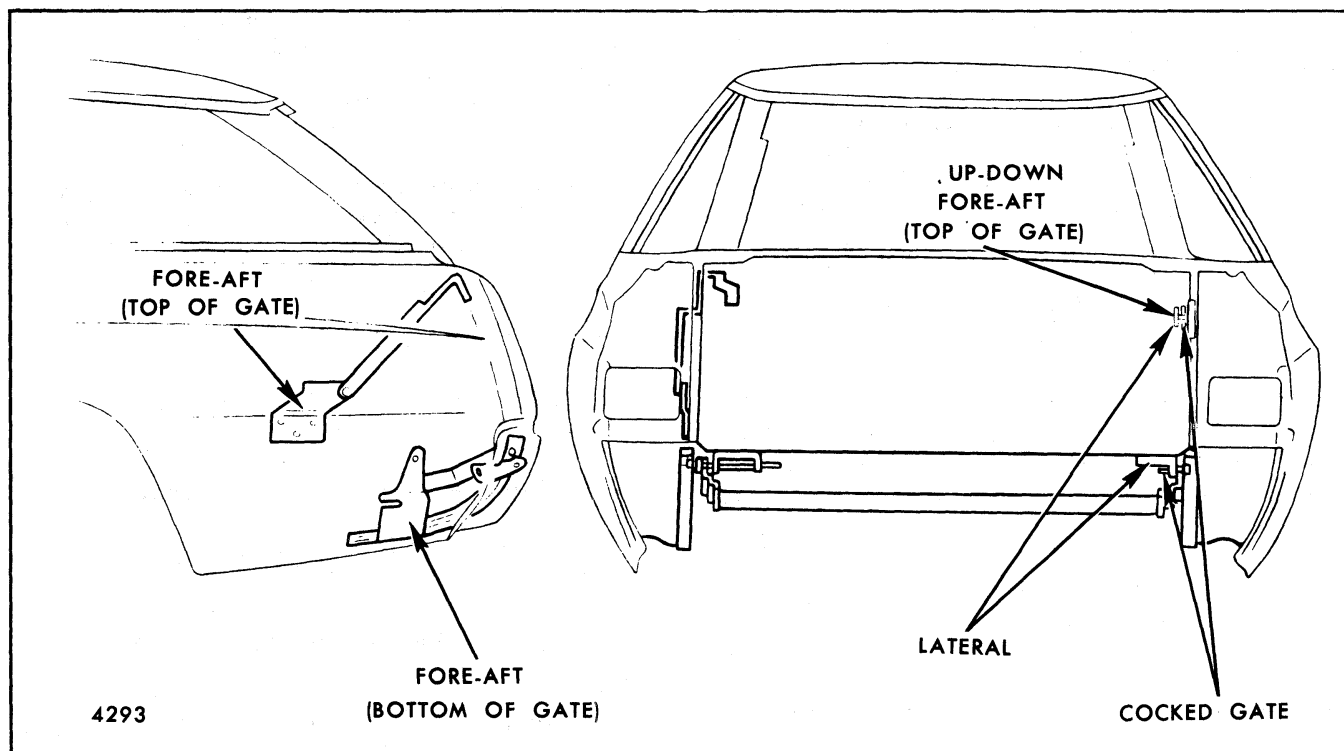


Fig. 7-147-Location of Tailgate Adjustment Provisions

2. Loosen tailgate guide channel attaching screws.
3. Reposition tailgate fore-aft and tighten guide channel attaching screws.

To correct top of tailgate fore-aft, proceed as follows:

1. Right side.
 - a. Gain access to striker assembly and loosen striker pin jamb nut and striker assembly nut (Fig. 7-142).
 - b. Position tailgate fore-aft and tighten striker assembly.
2. Left side.
 - a. Gain access to lift arm and hinge assembly and loosen assembly attaching bolts (Fig. 7-140).
 - b. Position tailgate fore-aft and tighten lift arm and hinge assembly attaching bolts.

Lateral adjustment of the tailgate is allowed by the elongated attaching bolt holes in the lower right roller support (Fig. 7-136). A corresponding lateral adjustment of the striker assembly is required.

1. With tailgate fully closed remove right access cover from body rear lower housing (Fig. 7-117).

2. Loosen lower right roller support attaching screws (Fig. 7-137).
3. Adjust roller support to position tailgate laterally and tighten roller support attaching screws.
4. Adjust striker pin as required.

WINDOW AND TAILGATE CONTROL SYSTEM

Description

The tailgate and window control switch mounted on the rear of the right quarter outer panel adjacent to the tailgate is a combination of lock cylinder and control switch. Two control switches are used; one for the manual tailgate which includes a link to the lock lever, and one for the power operated tailgate without link.

TAILGATE LOCK AND RELEASE SWITCH ASSEMBLY - (Manual Tailgate)

Description

The exterior control switch and release assembly for manual tailgate combines the lock cylinder and

switch assembly into one integral unit and is held in place by a flat spring retaining clip (Fig. 7-146). The key cylinder operates the glass electrically through the opening cycle (first position clockwise) and closing cycle (first position counterclockwise). The winged knob rotates only in a clockwise direction for mechanical release of the tailgate, however, the window must be raised approximately 8 inches before the tailgate may be released with the knob. The key is not required for operation of the knob, provided the window is opened by the instrument panel control switch.

The control knob is connected to the lock lever by a pawl, connecting rod and swivel (Fig. 7-146). The swivel is adjustable on the connecting rod in order to provide correct switch-to-lock lever relationship.

Removal and Installation

1. Remove spare tire cover and spare tire.
2. Remove tailgate window regulator as previously explained.
3. Disengage wire harness terminal block off control switch - manual or power.
4. On manual tailgate control switches, disengage control switch-to-lock lever link. Remove control switch retaining clip and withdraw switch and cylinder unit outward through piercing in quarter panel (Fig. 7-146).
5. On power tailgates pull control switch toward front of car to separate switch from cylinder and remove switch (Fig. 7-144). Do not disengage switch-to-cylinder retaining clip.
6. To install, reverse removal procedure.

Adjustment (Switch Pawl-to-Lock Lever Rod on Manual Gates Only)

1. With key cylinder in centered (vertical) position, withdraw key sufficiently to render cylinder inoperative (Fig. 7-146).
2. Assure that tailgate lock is in unlatched position (lock lever down).
3. Rotate switch pawl to full down position and hold in place.
4. Adjust swivel on pawl-to-lock lever rod to align with pilot hole on lock lever (Item "5", Fig. 7-146).

5. Rotate pawl upward and engage swivel in clip on lock lever (Item "8", Fig. 7-146).
6. Insert key and check operation of lock release.

NOTE: Check operation of window stop cable and clip assembly. (Refer to "Adjustment" - Window Stop Cable and Clip Assembly).

Disassembly

1. Remove control switch assembly as previously explained.
2. Remove switch retainer (Fig. 7-148).
3. Remove switch from end of lock cylinder assembly.
4. Disengage hook end of return spring from release knob tang.
5. Turn key to "window open" position and place middle finger between key and release knob as shown in Figure 7-149.

NOTE: Perform this step prior to removing or installing return spring and pawl assembly.

6. Rotate return spring and pawl assembly until pawl assembly tang (trapped in narrow key cylinder slot) aligns with the large key cylinder assembly slot and remove.
7. Remove snap ring retainer.
8. Rotate release knob and release knob escutcheon until their tangs are approximately 1/4" apart and withdraw key cylinder assembly.
9. Rotate release knob within release knob escutcheon and remove.
10. To assemble, reverse above procedure.

TAILGATE WINDOW CONTROL SWITCH - (Power Tailgate Only)

Description

The tailgate and window control switch for power operated tailgates is comprised of a key cylinder and a switch assembly held together by a wire-type clip (Fig. 7-144). The switch includes three positions, each to the right and left of center (vertical) position, of the key cylinder. The total of six switch positions

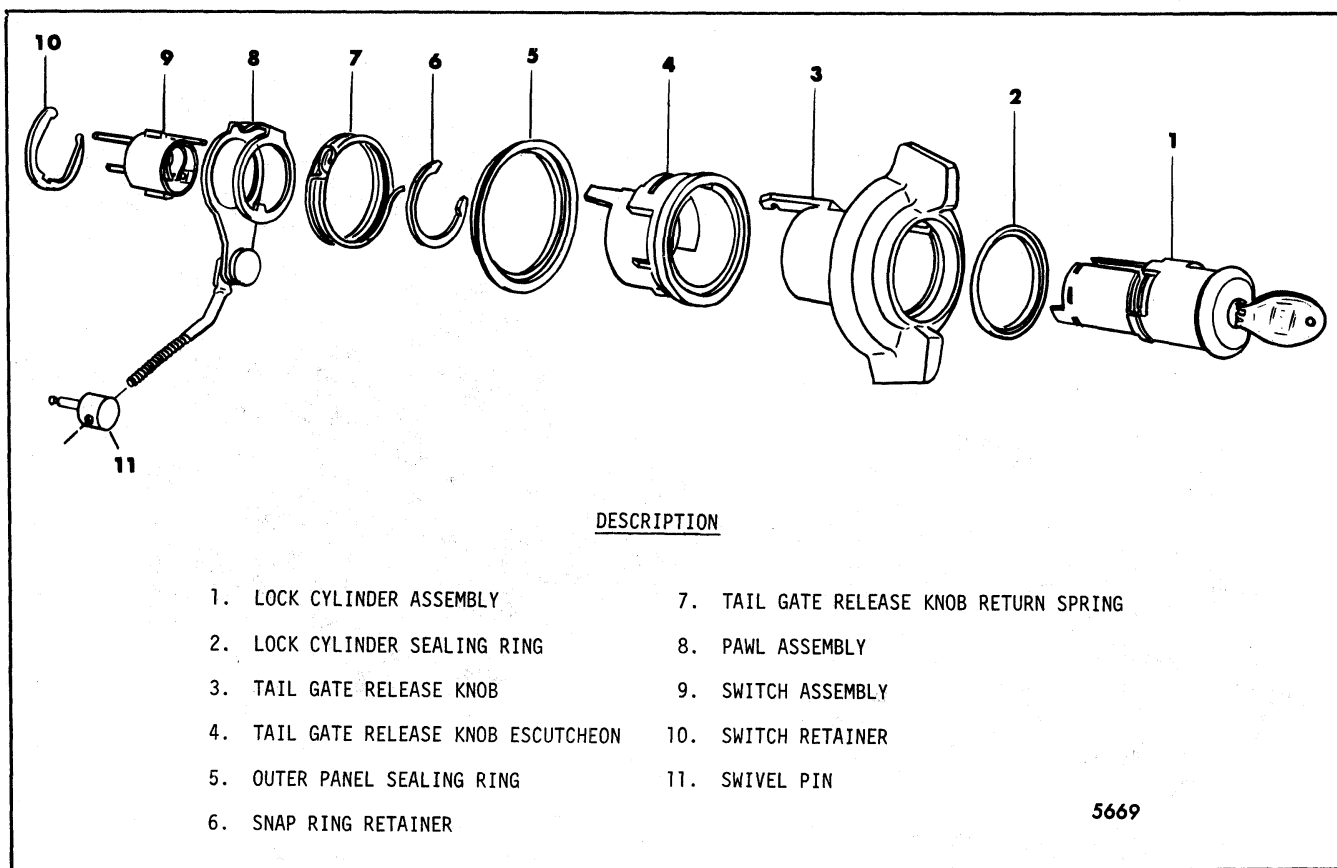


Fig. 7-148-Manual Tailgate Lock and Release Switch Assembly

allows opening or closing of window only, tailgate only or both window and tailgate simultaneously.

Removal and Installation

1. Remove control switch as previously explained.
2. Remove key cylinder retaining clip and remove cylinder (Fig. 7-144).
3. To install, reverse removal procedure.

RETRACTABLE TAILGATE LUBRICATION

Description

All mechanical components that have relative mo-

tion with other parts are lubricated during assembly. If additional lubrication is required the specified materials or their equivalents as stated here should be used.

The following tailgate and window components should be lubricated when required with a thin coat of white lithium soap grease (Fiske Bros. Lo-Temp Lubriplate No. 777 or equivalent) as shown in Figure 7-150.

1. Tailgate lock fork bolt (View "A").
2. Torque roller shaft and synchronizing torque shaft-to-link shoulder bolt (View "B").
3. Torque rod and torque rod block-out (View "C").
4. Window guide cams and tailgate guide channels (Section D-D).

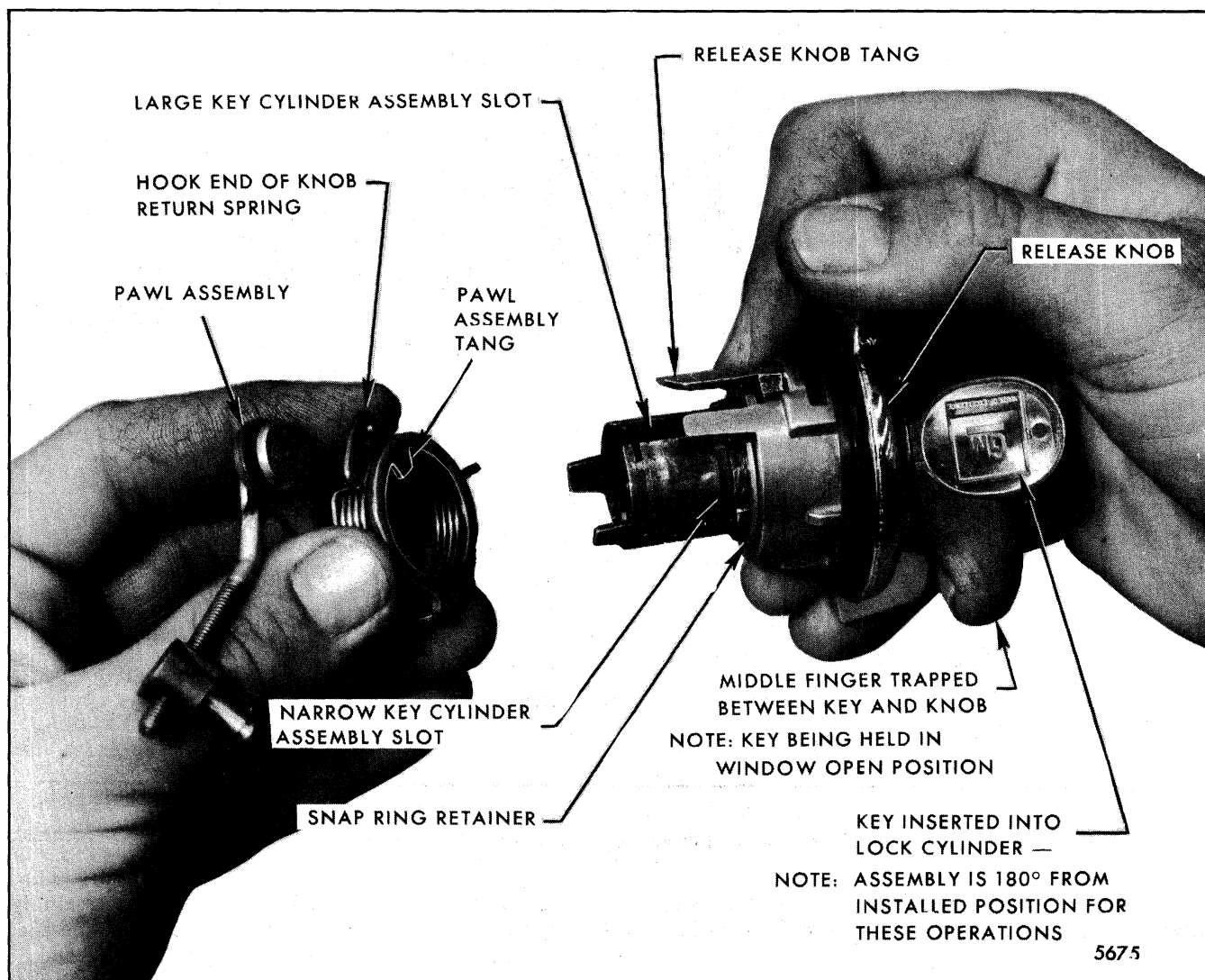


Fig. 7-149-Loading Pawl - Spring Assembly to Key Cylinder

RETRACTABLE TAILGATE CONTROL SYSTEM DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Exterior key switch cannot be rotated sufficiently counter-clockwise to lower window. (Manual tailgate)	1. Swivel on switch pawl-to-lock lever rod positioned too high.	(A) Adjust swivel downward.
2. Exterior key switch cannot be rotated sufficiently clockwise to raise window. (Manual tailgate)	1. Swivel on switch pawl-to-lock lever positioned too low.	(A) Adjust swivel upward.

RETRACTABLE TAILGATE CONTROL SYSTEM DIAGNOSIS CHART (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
3. Window cannot be raised or lowered with exterior key switch - cylinder rotational travel correct. (Manual tailgate)	1. Possible open window electrical circuit.	(A) Check window circuit (refer tailgate coverage in Electrical Section).
4. Tailgate or window inoperative from exterior switch. (Power tailgate)	1. Possible open tailgate or window electrical circuit. 2. Possible defective switch contacts or cam.	(A) Check tailgate or window circuit. Refer tailgate coverage in Electrical Section. (A) Remove and inspect switch

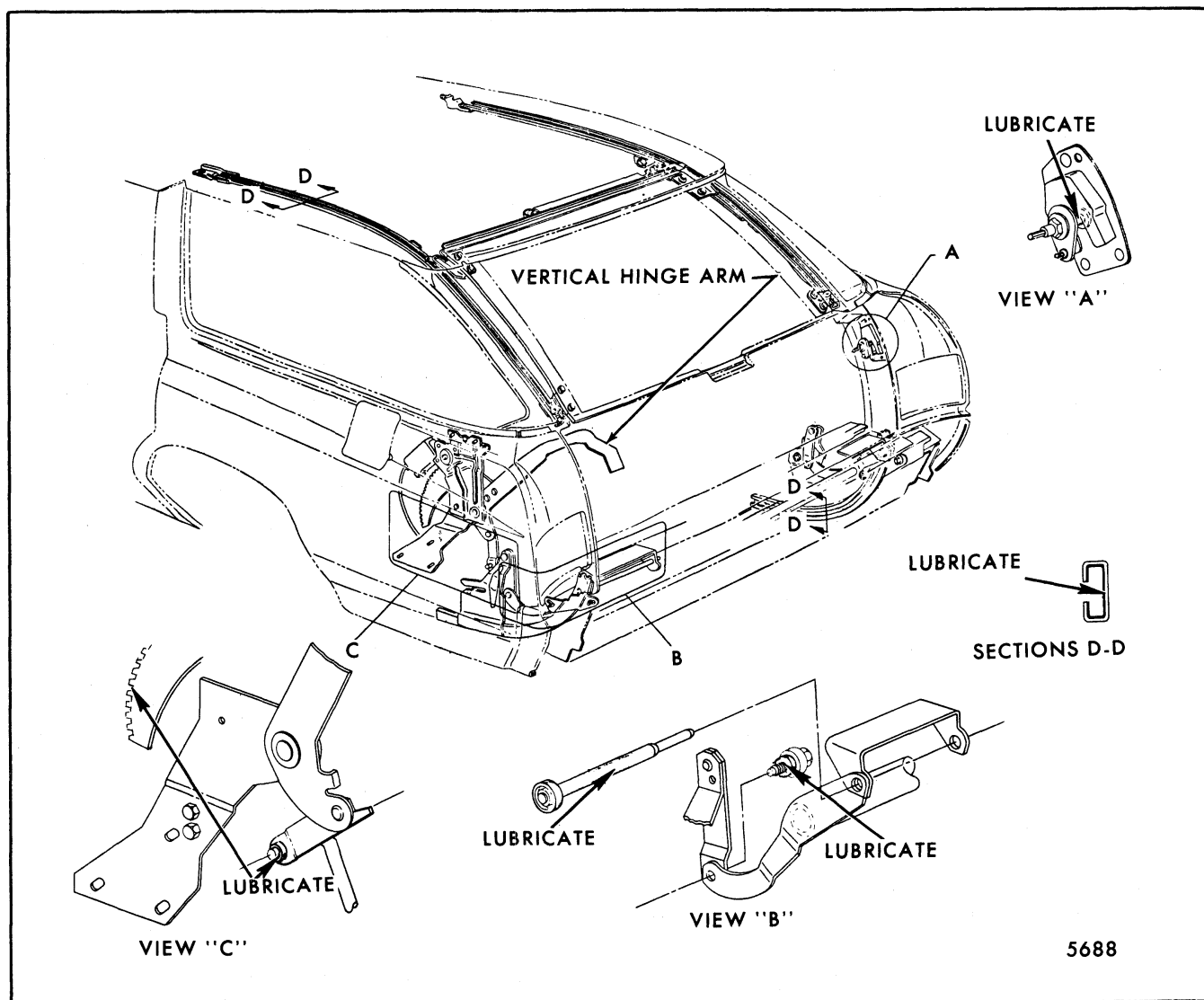


Fig. 7-150-Retractable Tailgate Lubrication

SECTION 8

ROOF

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HEADLINING - CLOTH AND VINYL COATED (SOFT)

HEADLINING - "A, B, C and E" STYLES

Description

The headlining assembly is attached to the roof inner panel by concealed plastic retaining strips. The retaining strips are sewn to the headlining assembly and have rectangular lugs that fit into "T"-slots in the roof inner panel (see Fig. 8-1).

The headlining is further retained along the side roof rails and roof extension areas by cement. Garnish moldings or finishing lace is also used to assist in retaining the headlining. Side roof rail garnish moldings are secured to a headlining retainer or the side roof rail by clips which are located in the molding.

When finishing lace is used at the windshield and back window or back body opening, the headlining

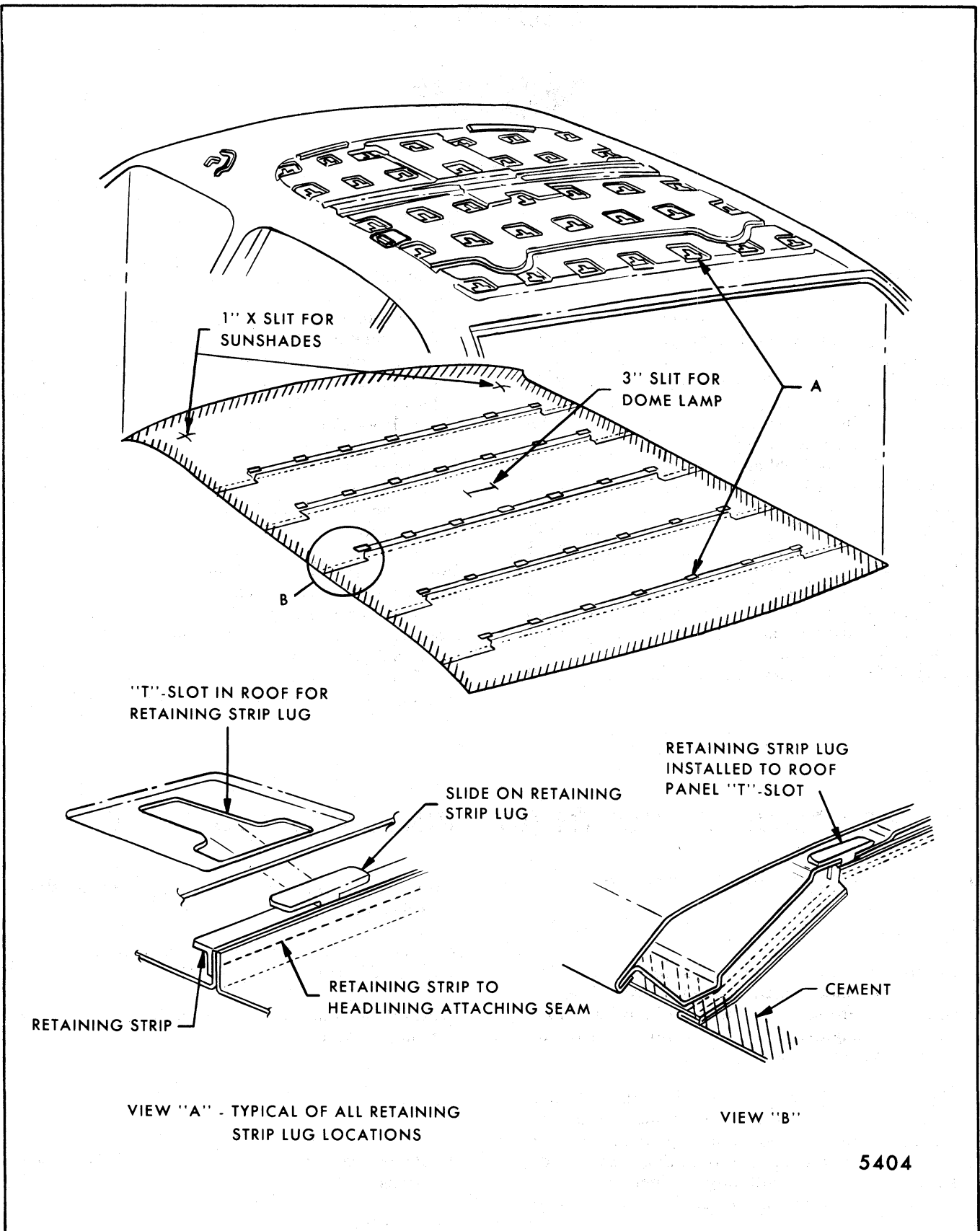
is secured at these areas with an approved nonstaining adhesive.

Removal of quarter upper trim is covered in the Rear Quarters Section of this manual.

Removal of adjacent interior moldings is covered later in this section.

Removal

1. Place protective cover over seat cushions and backs.
2. Prior to removing headlining, remove following hardware and trim assemblies if installed over headlining.



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Fig. 8-1-Typical Cloth or Vinyl Headlining Installation - "A, B, C and E" Styles

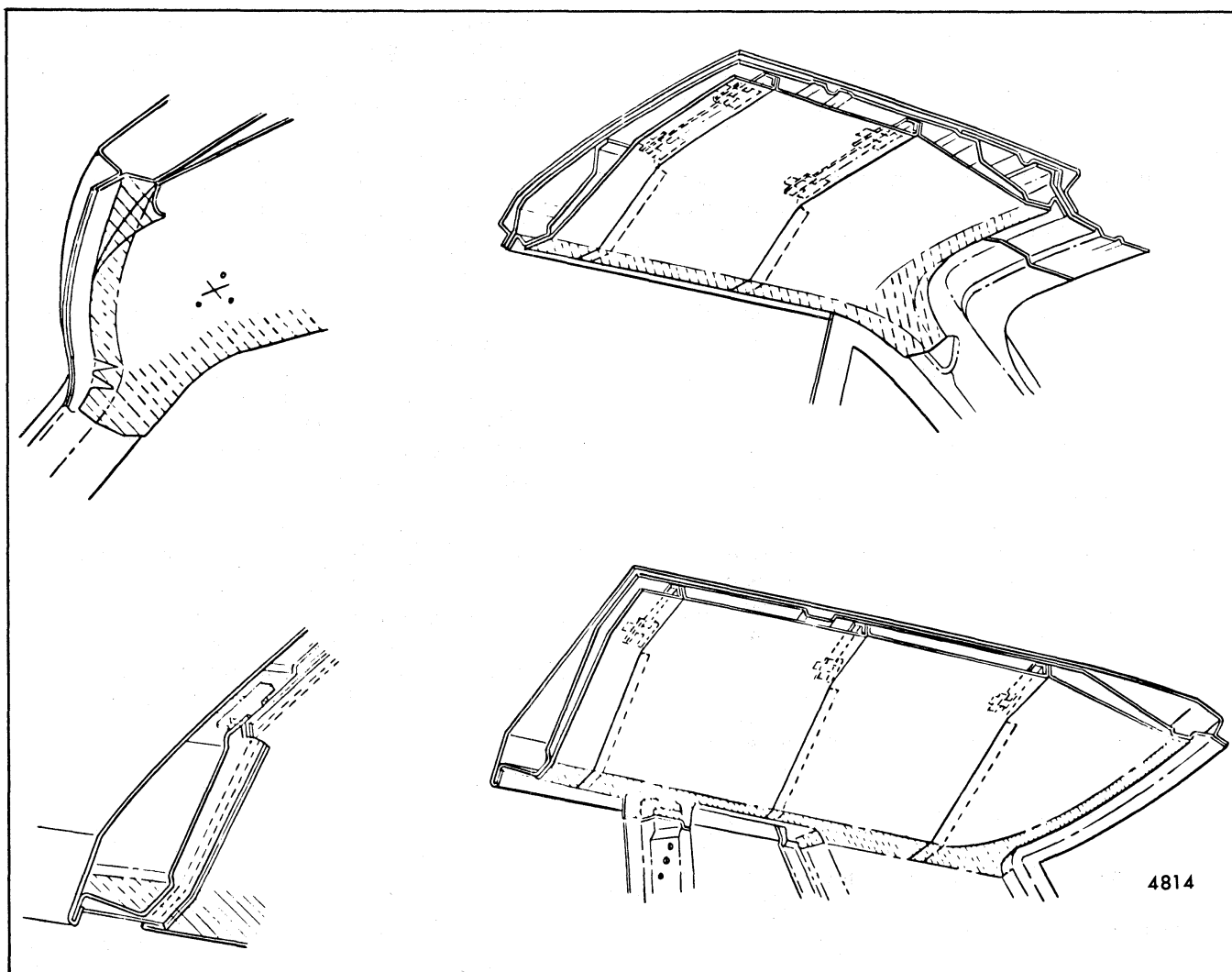


Fig. 8-2-Typical Trim Cement Application to Headlining

- a. Windshield side and upper garnish moldings or finishing lace.
 - b. Map lamp.
 - c. Sunshade supports.
 - d. Dome or rear quarter courtesy lamps.
 - e. Coat hooks.
 - f. Side roof moldings or finishing lace.
 - g. Back window garnish moldings or finishing lace.
 - h. Center pillar upper trim assembly.
 - i. Rear quarter trim, where necessary.
 - j. Quarter upper trim finishing panel.
 - k. Vista vent moldings or finishing lace.
 - l. Shoulder strap retainers and covers.
3. Carefully detach cemented edge of headlining around entire perimeter at shoulder belt anchor locations and vista vent opening if present. If headlining is difficult to detach, apply heat with heat gun to cemented areas for easier removal and to prevent tearing.
- NOTE:** Keep headlining clean by gathering or folding assembly with retaining strips to outside of material during removal.
4. Starting at front of body carefully detach retaining strips by pulling toward rear of body to disengage rectangular lugs from "T"-slots on each strip and remove headlining from body.

Installation

1. Check headlining retaining strips for cracked or broken rectangular lugs. If damaged use metal service clip to replace.
2. If replacing headlining on styles with vista vent, the headlining and plastic retaining strips must be cut and trimmed using the following procedure.
 - a. Cut No. 1 and No. 2 retaining strips at Point A and B, see Figure 8-3, View "C". On "35" styles cut No. 1 retaining strip only, at same locations.

CAUTION: *Exercise care not to damage headlining material when cutting retaining strip(s) and seams.*

- b. Carefully cut thread (top seam only) that attaches retaining strip to headlining between points A and B on No. 1 and No. 2 retaining strips and remove (see Fig. 8-3, View "C").
 - c. Cement seam to prevent stitching from coming loose at remaining retainer lugs (see Fig. 8-3, View "C").
3. Lift headlining assembly into body. Starting at rear of body, engage outer lug of retaining strip to "T"-slot in roof inner panel and slide forward to secure. Working inboard insert remaining lugs of attaching strip.
4. Working forward, keeping tension pulled toward front of body, install and secure remaining retaining strips.

NOTE: Position headlining from side to side as required to keep headlining centered during installation.

5. Apply an approved nonstaining trim cement to headlining surface at windshield, side roof rail, shoulder belt anchor locations and back window or back body opening (see Fig. 8-2).

NOTE: If sequence in step 6 is not followed, wrinkles may occur at ends of retaining strips when headlining is secured at side roof rails.

6. Stretch and secure headlining at windshield first; then secure at back window or back body opening, rear quarter areas and side roof rail.

CAUTION: *To avoid possible interference with operation of shoulder belt retractors be sure headlining material is thoroughly ce-*

mented and properly attached around base of retractor assembly openings. Maximum trim allowance inside flange of opening is one quarter (1/4) inch all around.

7. On styles with vista vent option, cut out area of headlining at roof opening leaving sufficient material to fold over entire edge. Apply cement and secure around opening (see Fig. 8-3, View "B").
8. Permanently attach material removing all draws and wrinkles.
9. Depress headlining against roof inner panel to find locations of attaching screw holes for all previously removed inside hardware, moldings and trim assemblies.

HEADLINING - STYLES WITH SUN ROOF

Headlinings on styles with the sun roof option installed are cemented to the roof inner panel. When replacement is necessary, headlining material must be ordered by the yard and trimmed to the proper size.

Removal

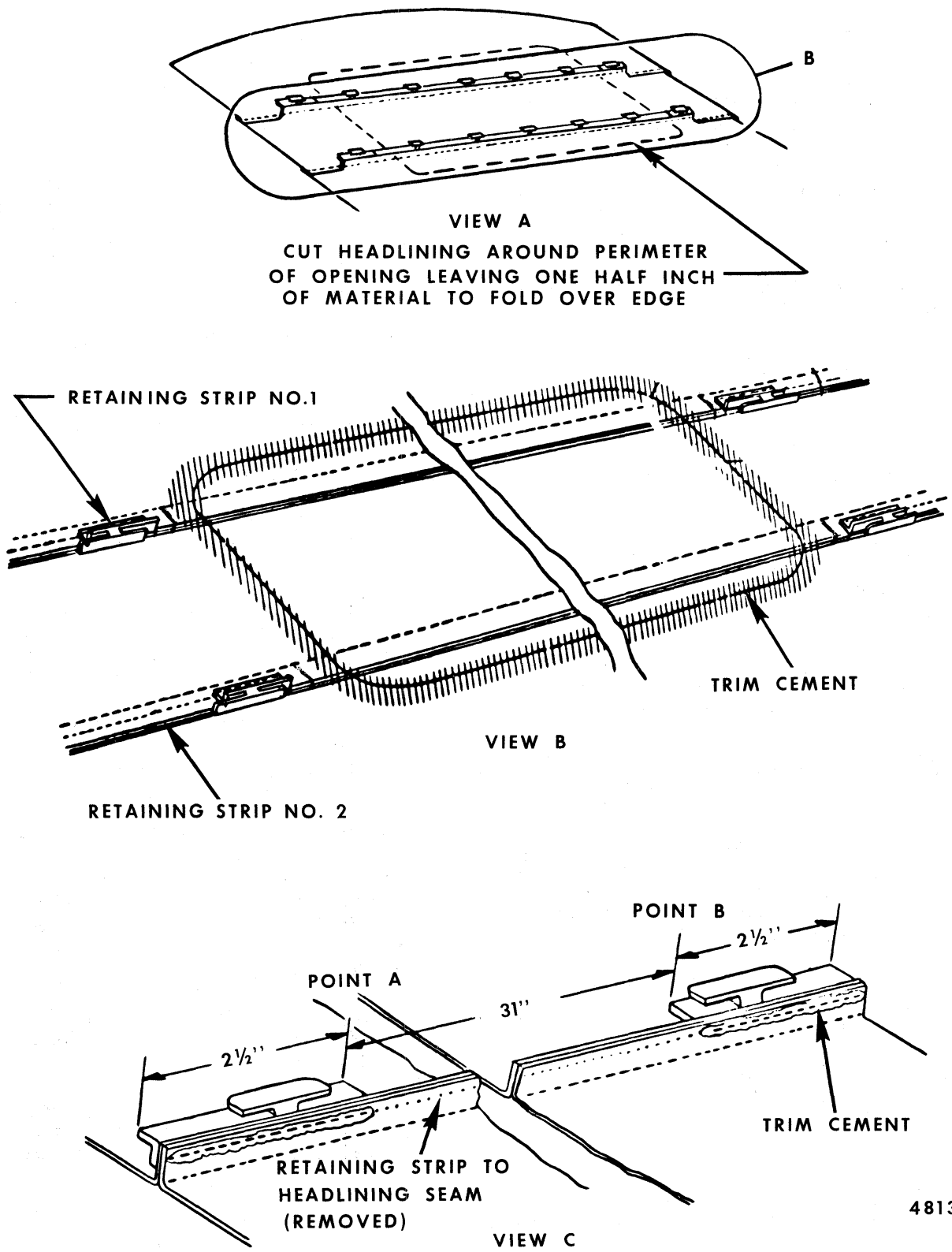
1. Remove all hardware and trim assemblies as previously described.
2. With sun roof in open position, remove windlace and detach headlining at sun roof opening and around entire perimeter of body.

Installation

1. Place original headlining on new material and mark to determine approximate size, then trim with scissors.

NOTE: Cut new headlining so that it is slightly larger than original to avoid a short or improper fit.

2. Place protective covering over seats.
3. Apply trim cement at area of headlining to rear of sun roof opening and lift into body.
4. Secure and stretch headlining to roof inner panel at rear of sun roof opening.
5. Apply trim cement to edges of headlining and secure at back window, windshield and side roof rail areas.



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Fig. 8-3-Headlining Installation - Styles with Vista Vent

6. Depress headlining against sun roof opening and mark area to be cut out.

NOTE: Leave sufficient material to fold over flanges of sun roof opening.

7. Using a sharp knife or scissors cut an "X" slit across section of headlining covering sun roof opening. Then cut off triangular pieces.
8. Cement headlining around entire perimeter of sun roof opening smoothing out all draws and wrinkles.
9. Replace all previously removed components to complete installation.

HEADLINING - "D" Styles

Description

The headlining assembly is contoured to the inner surface of the roof panel by listing wires. The listing wires are attached to the headlining by concealed listing wire pockets which are part of the headlining. The ends of the listing wires are secured in holes at the side roof rail or by use of clips which are attached to the side rail with screws.

When finishing lace is used at the windshield and back window opening, the headlining is attached at those areas with non-staining adhesive.

Where garnish moldings are utilized, the headlining is tacked or stapled in addition to being cemented at the windshield and back window openings.

The headlining is retained along the side roof rails by cement or the use of a pronged retainer. Garnish moldings are also used to assist in retaining the headlining. The side roof rail garnish moldings are secured by clips which are located in the moldings.

At the roof extension area, the headlining is secured either by cement to a metal retainer or by tacks or staples to a trimstick (see Fig. 8-5, View "E").

Quarter upper trim is covered in the Rear Quarters Section of this manual.

Removal

1. Place protective coverings over seat cushions and backs.
2. Prior to removing headlining, remove following hardware and trim assemblies if installed over headlining.

- a. Windshield side and upper garnish moldings or finishing lace.
 - b. Shoulder harness retainers and covers.
 - c. Sunshade supports.
 - d. Dome or rear quarter courtesy lamps.
 - e. Coat hooks.
 - f. Side roof rail moldings.
 - g. Back window garnish moldings or finishing lace.
 - h. Center pillar upper trim assembly.
 - i. Rear quarter trim where necessary.
 - j. Quarter upper trim finishing panel.
 - k. Back body opening garnish moldings.
3. Carefully remove tacks or staples securing headlining at windshield and back window opening if present.
 4. Use headlining inserting tool J-2772 (or equivalent) or similar wide-bladed tool and carefully disengage headlining from pronged retainers where present (see Fig. 8-4, View "B").
 5. Carefully detach cemented edge of headlining around entire perimeter. Exercise care to keep headlining material clean by gathering or folding headlining with listing wires on outside.
 6. Starting at front of body, carefully disengage No. 1 and No. 2 listing wires from side roof inner rails and from plastic supporting clips on roof bows (see Fig. 8-4, View "A"). In like manner, working from rear of body, disengage listing wires from side roof rails and tabs above back window.
 7. Disengage No. 3 listing wire from plastic clips on structural bow and remove headlining assembly from body.

NOTE: Note in which holes listing wires are installed in side roof rails. Listing wires should be placed in same hole when replacing headlining.

8. If replacing headlining, remove listing wires from pockets of old headlining.

NOTE: Listing wires removed from old headlining must be installed in corresponding pockets of new headlining.

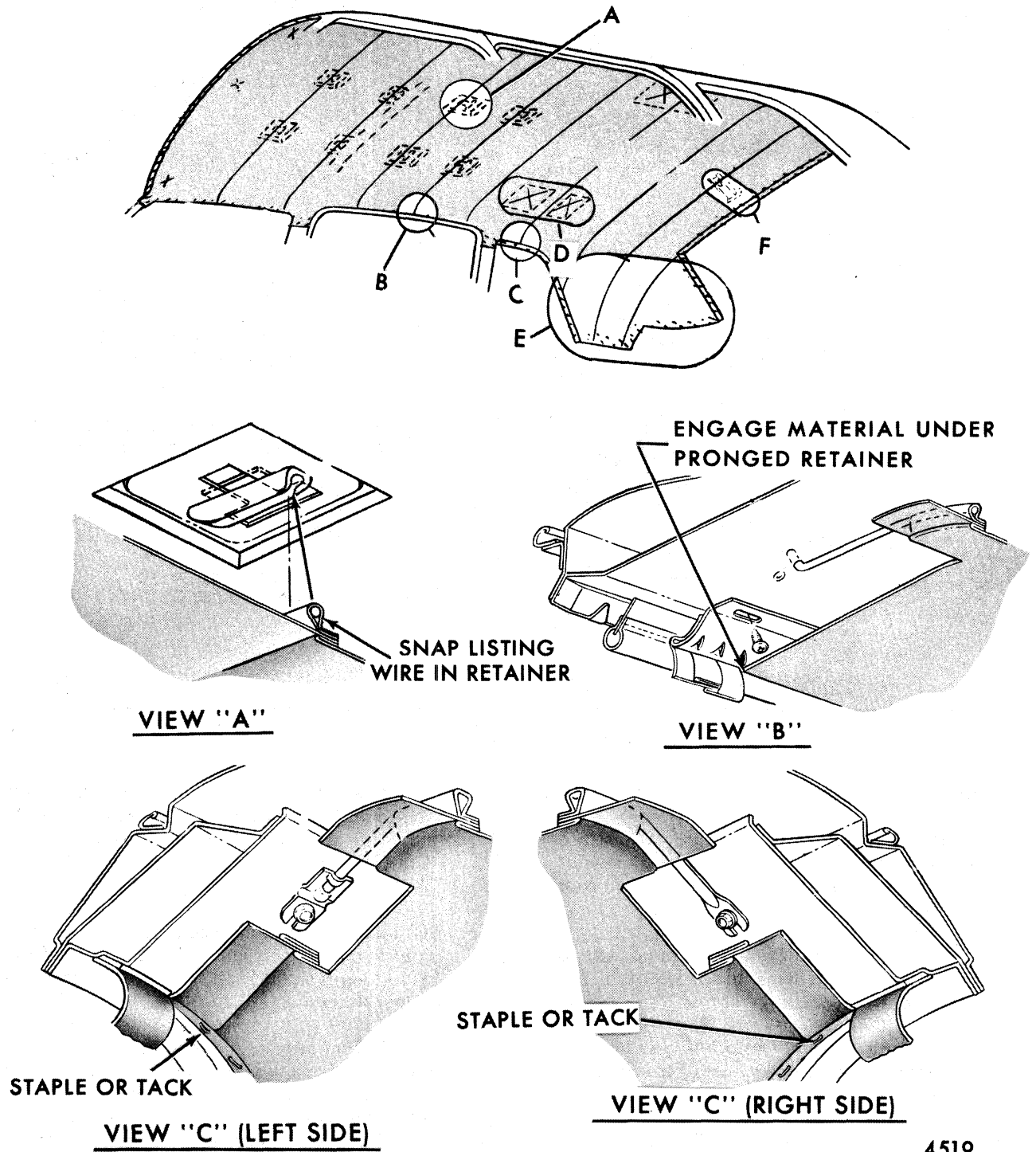


Fig. 8-4-Headlining Installation - "D" Body Styles

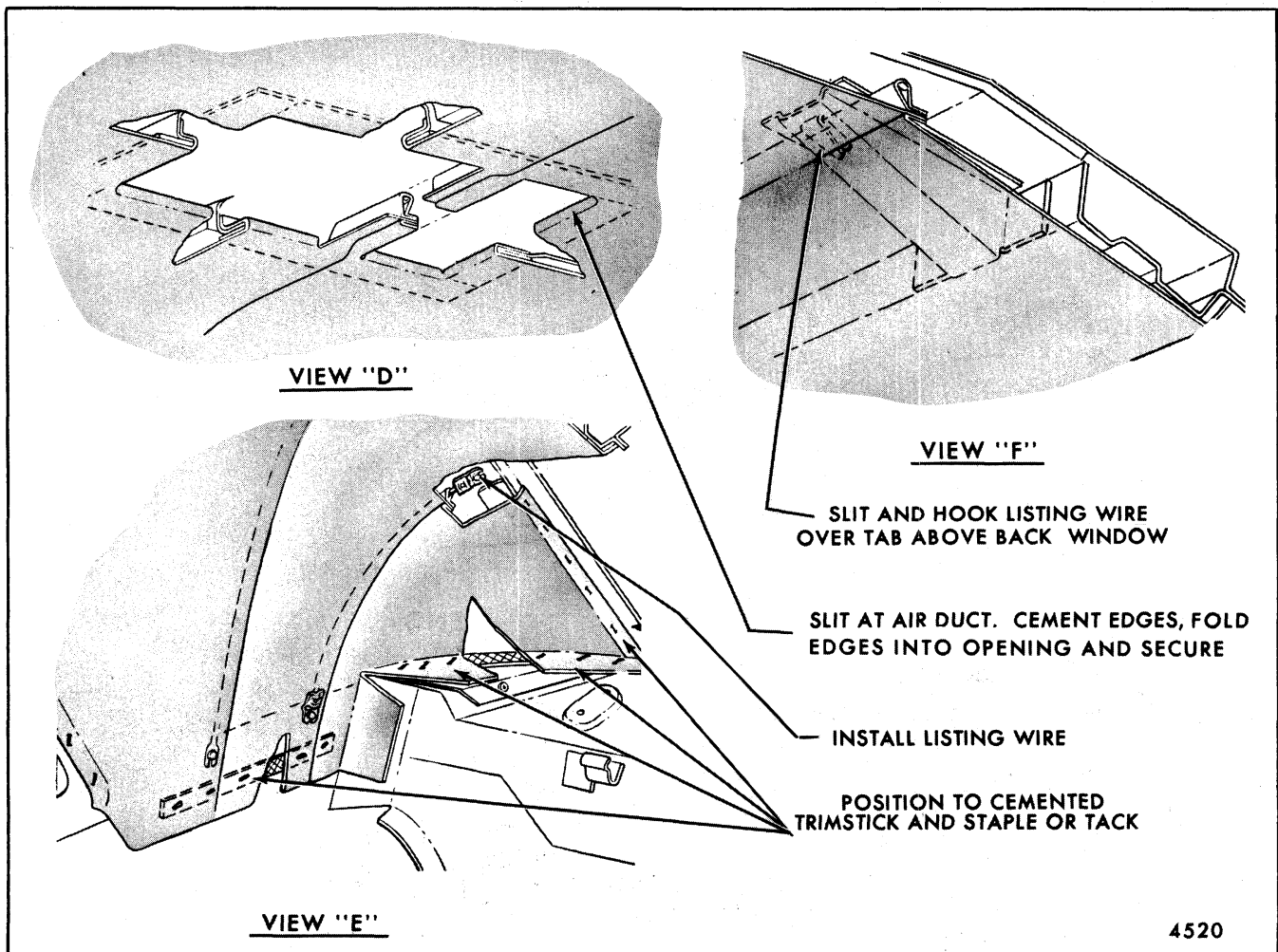


Fig. 8-5-Headlining Installation - "D" Body Styles

Installation

1. If previously removed, install listing wires into corresponding pockets of new headlining assembly. Check that plastic clips are installed in roof bow slots.
2. Apply an approved nonstaining trim cement to headlining surface at windshield, side roof rail and back window opening.
3. Lift headlining assembly into body and install No. 3 listing wire into retainers on structural roof bow.
4. Working rearward from No. 3 listing wire, install listing wires in side roof rails and snap list-

ing wires into plastic retainers on roof bows. Hook rear listing wire over tabs at back window and bend upward to secure. Working forward, install remaining listing wires (see Fig. 8-4, View "A").

NOTE: Listing wires may be adjusted up or down by utilizing appropriate holes in side roof rails. Listing wires should rest tight against roof panel after installation (see Fig. 8-4, View "B").

5. Stretch and secure headlining at windshield first, then back window opening. Stretch and secure headlining at rear quarters and side roof rails. Permanently attach material removing draws and wrinkles and replace all previously removed inside hardware and trim assemblies.

ONE-PIECE FORMED HEADLINING - "F, H and X" Styles

Description

The one-piece formed headlining on "F and X" styles consists of molded hardboard covered with a foam and vinyl facing. On "H" styles a grained perforated hardboard with an insulator cemented to the upper surface is used. The formed headlining is held partially in place by retaining tabs located in the side roof rail which engage recessed slots in both sides of the headlining assembly. Final attachment is accomplished when the interior moldings and attaching screws that retain the sunshade brackets, dome lamp base, coat hooks and shoulder strap retainer covers are installed (see Figs. 8-6, 8-7 and 8-8).

The one-piece construction requires the headliner be serviced as a complete assembly in all cases.

Removal of adjacent interior moldings is covered later in this section.

Removal

1. Remove the following items:
 - a. Courtesy lamps.
 - b. Sunshade support brackets.
 - c. Coat hooks.
 - d. Upper quarter trim finishing panels.
 - e. Side roof rail moldings.
 - f. Windshield and back window garnish moldings.
 - g. Shoulder strap retainers and covers.
 - h. Windshield side garnish molding.
2. Disengage tabs on each side of the headlining assembly from the attaching slots and move the assembly rearward enough to provide clearance for the front of the assembly to the front door opening (see Figs. 8-6, 8-7 and 8-8).
3. Lower all windows on both sides of car to the full down position and remove headlining

through window openings. On "X-17" and "H-07,15 and 77" styles remove headlining through back body opening.

Installation

If the replacement headlining does not have an insulator cemented to the upper surface (standard on "H-77 and 15" styles, optional on "H-11") carefully remove insulator from original headlining if present and spot cement insulator to replacement headlining sufficiently to hold insulator in position during installation.

1. Load rear portion of headlining diagonally into unit through side window opening(s). On "X-17", "H-07,15 and 77" styles the headlining assembly is loaded through the back door.
2. On "X-27,69" styles flex headlining with finish side down sufficiently to insert into body through right front door. Then lift rear edge over front seat and align headlining to roof inner panel.

CAUTION: *Care must be exercised when loading assembly. Over flexing may result in damage.*

3. Align headlining to roof inner panel with recessed slots positioned over retainers at side roof rail (see Fig. 8-8, View "A").
4. Engage headlining at tab locations to accomplish temporary retention to roof inner panel (see Fig. 8-8, View "A").
5. Align headlining with cut-outs for sunshade brackets and dome lamp at attaching locations.
6. Install sunshade brackets and dome lamp base.

NOTE: Do not tighten sunshade bracket and dome lamp attaching screws completely until headlining is properly aligned at all other hardware attaching locations.

7. Install all other previously removed hardware and interior moldings.

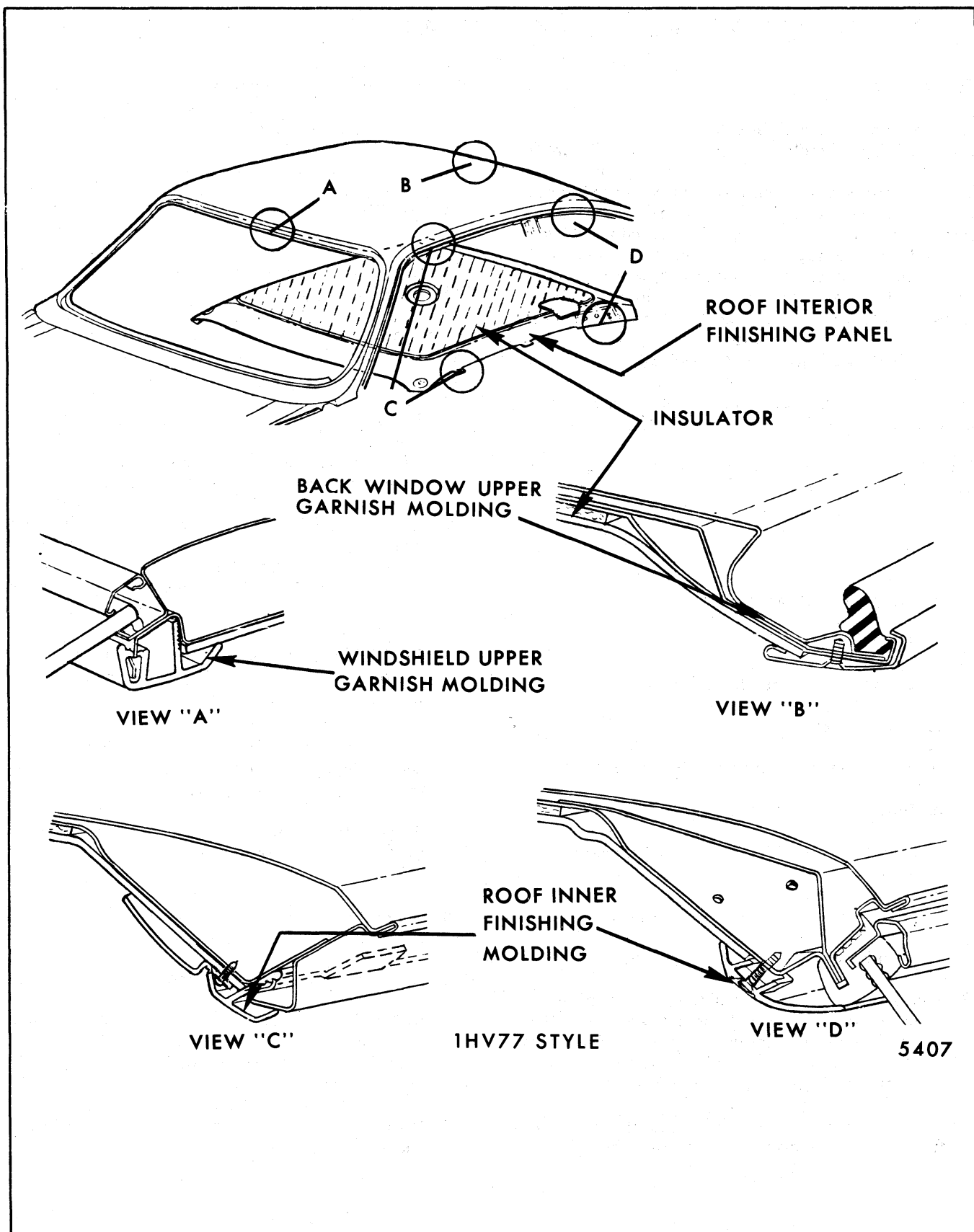


Fig. 8-6-Headlining (Roof Interior Finishing Panel) Assembly - "77" Styles ("07" Styles Similar)

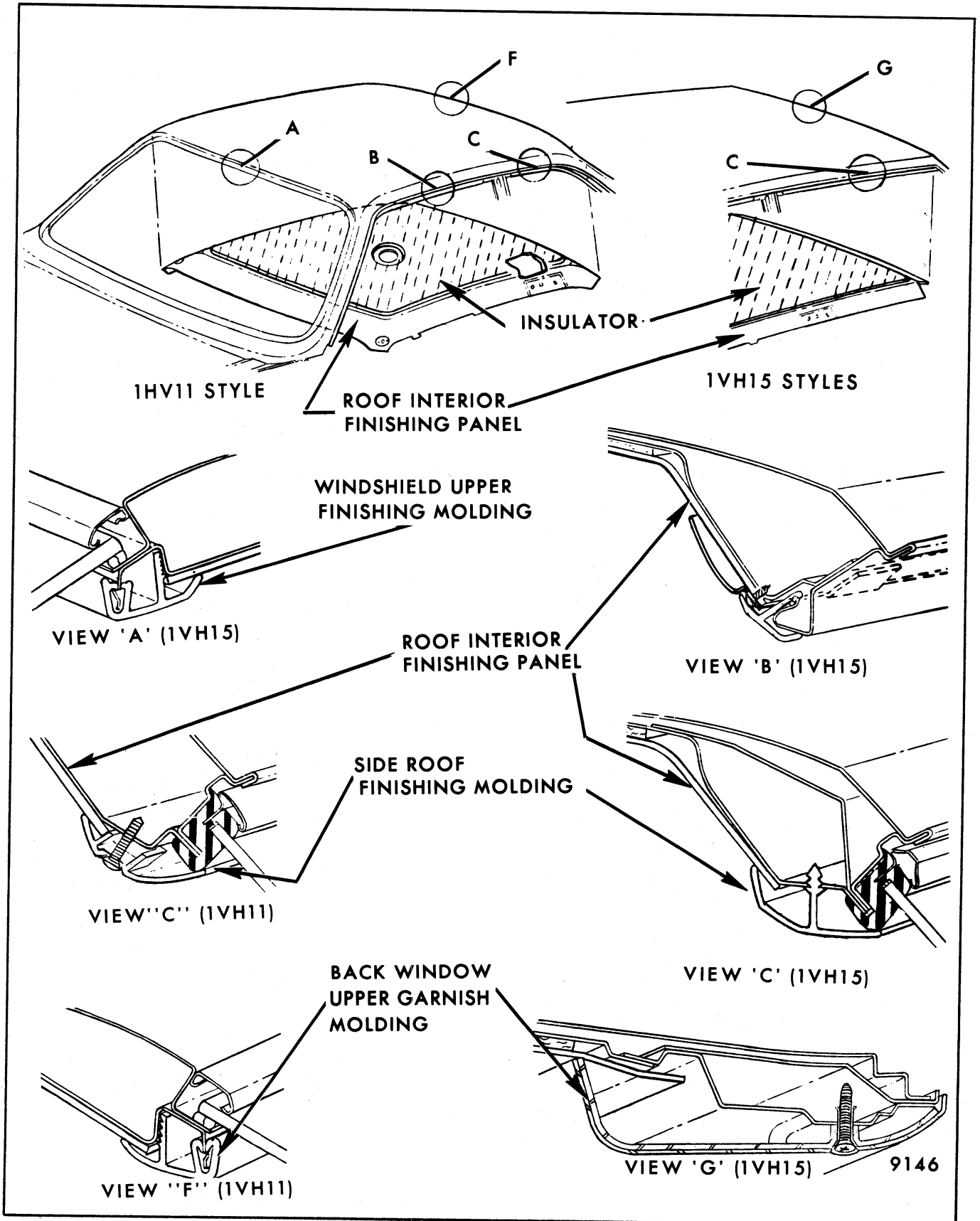
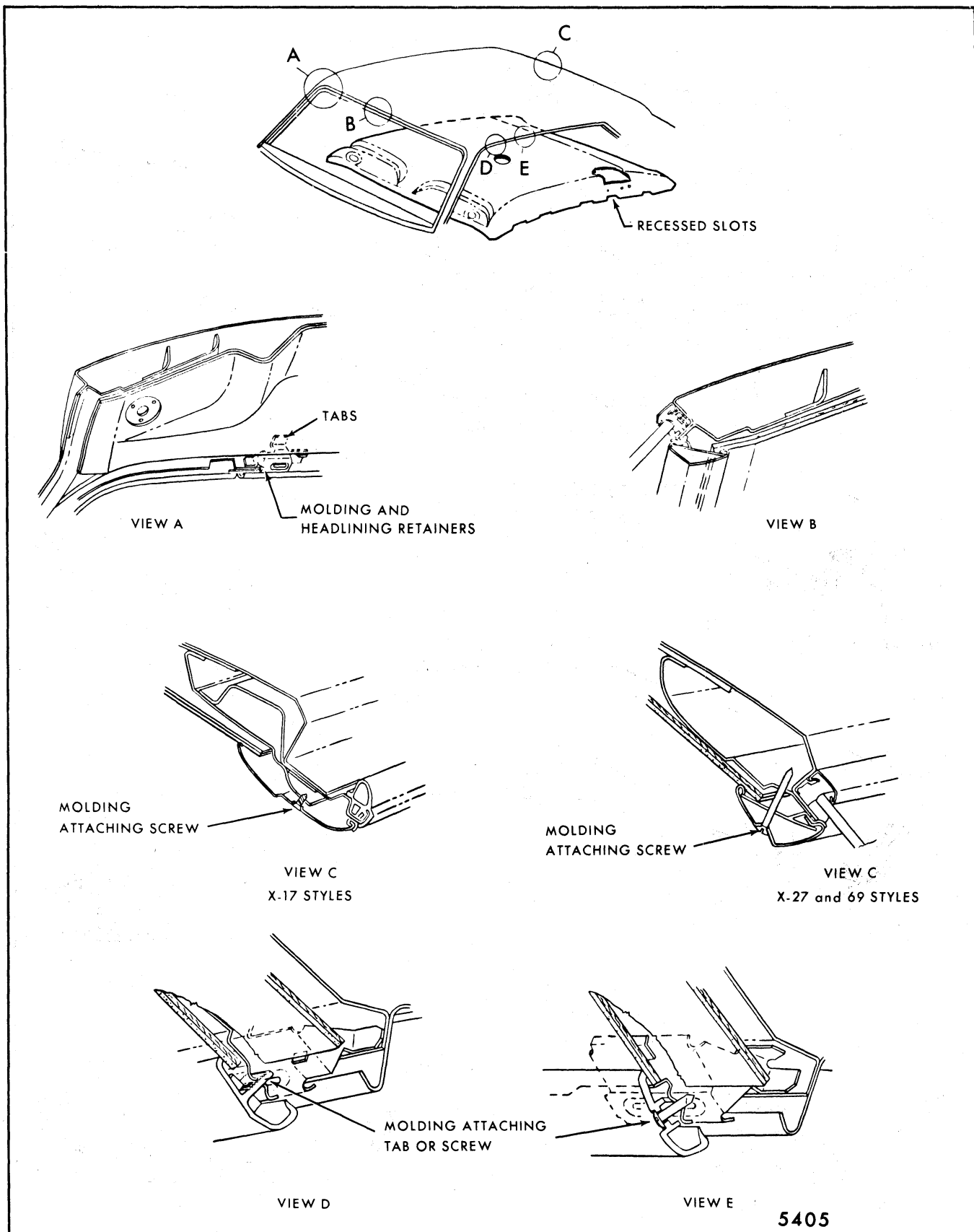


Fig. 8-7-Headlining (Roof Interior Finishing Panel) Assembly - "11 and 15" Styles



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Fig. 8-8-One Piece Formed Headlining - "F, H and X" Styles

DOME LAMPS

DESCRIPTION

The dome lamp operates in conjunction with the door jamb switch and/or the headlamp switch. The dome lamp harness extends up the left windshield pillar, inboard of the sunshade support and across the roof inner panel to the dome lamp. Clips in the harness attach to retaining slots in the roof inner panel. Circuit diagrams are illustrated in the Electrical Section of this manual. Typical dome lamp removal is shown in Figure 8-9.

Removal and Installation

1. Insert a flat-bladed screwdriver or similar tool between dome lamp lens and lamp base. Press inward and down to disengage lens retaining tabs from base.
2. Remove bulb from terminal clips.
3. Remove two lamp base attaching screws.
4. To disengage wire harness from lamp base, grasp terminal clip with pliers and push clips through back of base.
5. To install dome lamp assembly, reverse removal procedure.

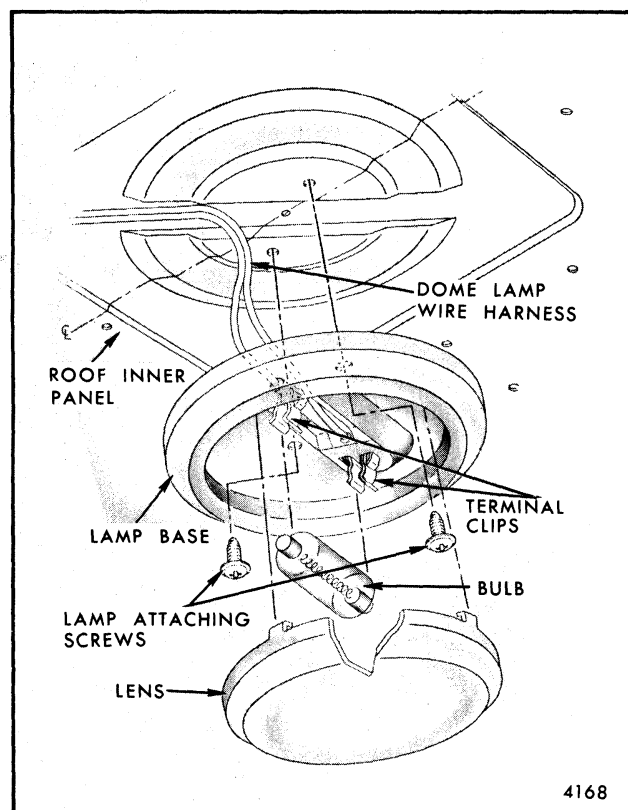


Fig. 8-9-Dome Lamp (Typical)

SUNSHADE AND VANITY MIRROR LAMP ASSEMBLIES

VANITY MIRROR AND LAMP ASSEMBLY (DOOR OPERATED SWITCH)

Description

The sunshade assembly is attached to the roof panel with three screws. When servicing the vanity mirror and lamp, it may not require removal of the shade from the roof.

The vanity mirror lamps are activated when the sunshade is lowered and the mirror cover (door) is raised. The lamps can be set at either high or low illumination by a switch located beneath the right side lens. The lamps turn off when the mirror cover (door) is closed.

The vanity mirror lamp harness extends above the windshield opening to the top of the windshield pillar. At this point a connector attaches to the lamp harness (Fig. 8-10).

Removal and Installation

1. Lower sunshade and raise mirror and lamp cover (door).
2. With a flat-bladed tool, pry at bottom edge of each lamp lens and remove.
3. Remove four attaching screws that secure the mirror and escutcheon assembly to the shade.
4. On back of mirror and escutcheon assembly, remove two attaching screws and remove electrical circuit board and lamp assembly.
5. Disconnect feed and ground wire terminals (Fig. 8-10).
6. To install, reverse removal procedure.

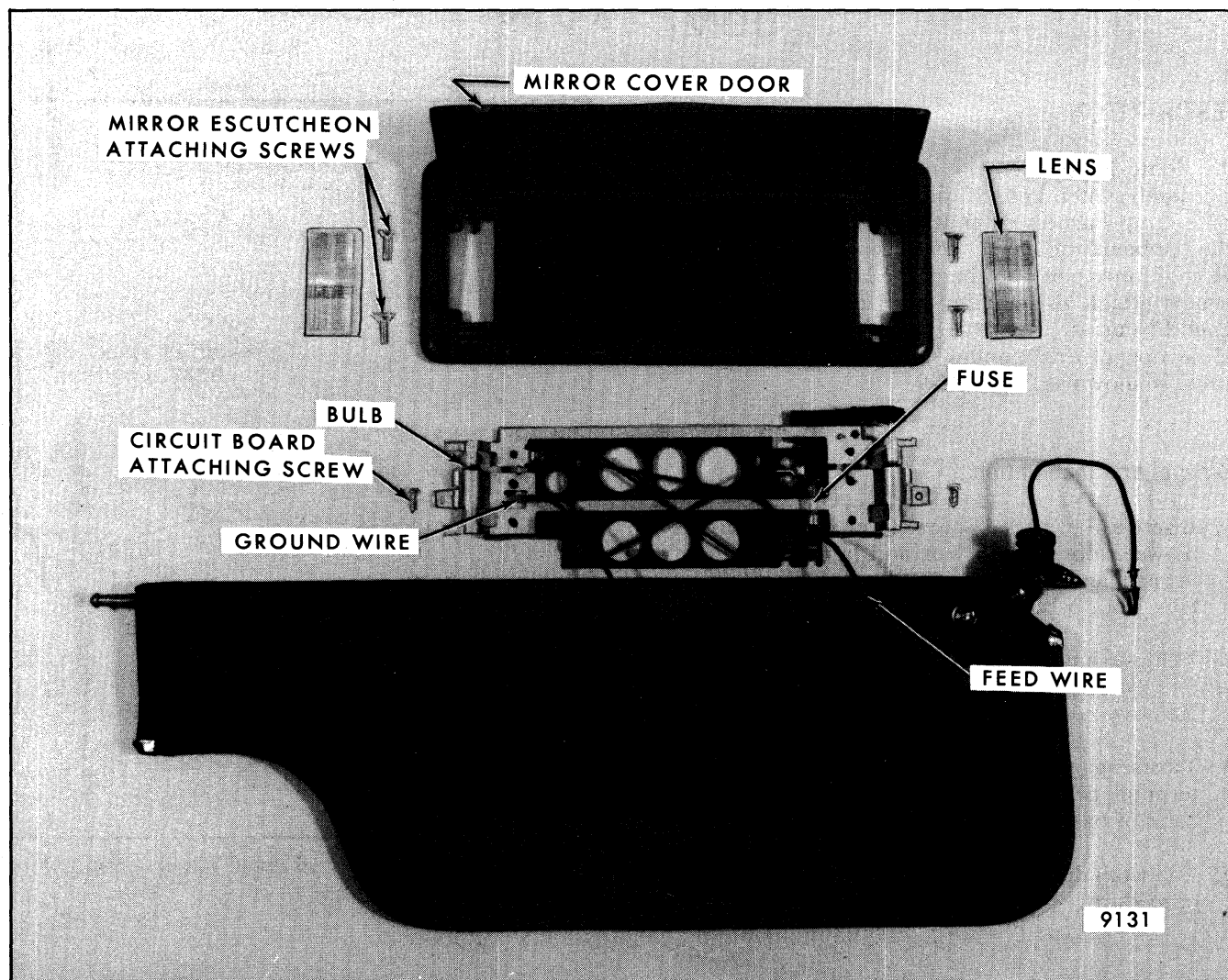


Fig. 8-10 - Vanity Mirror and Lamp Assembly

NOTE: Fuse replacements can be made after step 3.

VANITY MIRROR AND LAMP ASSEMBLY (MANUAL OPERATED SWITCH)

Description

The sunshade assembly is attached to the roof panel with three screws. When servicing the vanity mirror it may not require a complete removal of the shade from the roof.

The vanity mirror retains to the shade assembly with two button type fasteners and, when engaged, the mirror lamp escutcheon is held in place.

The lamps are activated by a on-off switch located

beneath the right side lens. In addition, a mercury switch is provided to prevent the lamps from remaining on when the sunshade is raised (Fig. 8-11).

Removal and Installation

1. Using a flat-bladed tool (putty knife), insert between escutcheon and sunshade trim and pry button type fasteners from sunshade.
2. To remove lens, use a flat-bladed screwdriver and depress locking tab on bottom or top edge of lens.
3. To install, reverse removal procedure.

NOTE: Bulb replacement or electrical connector service operation can be performed after step 2.

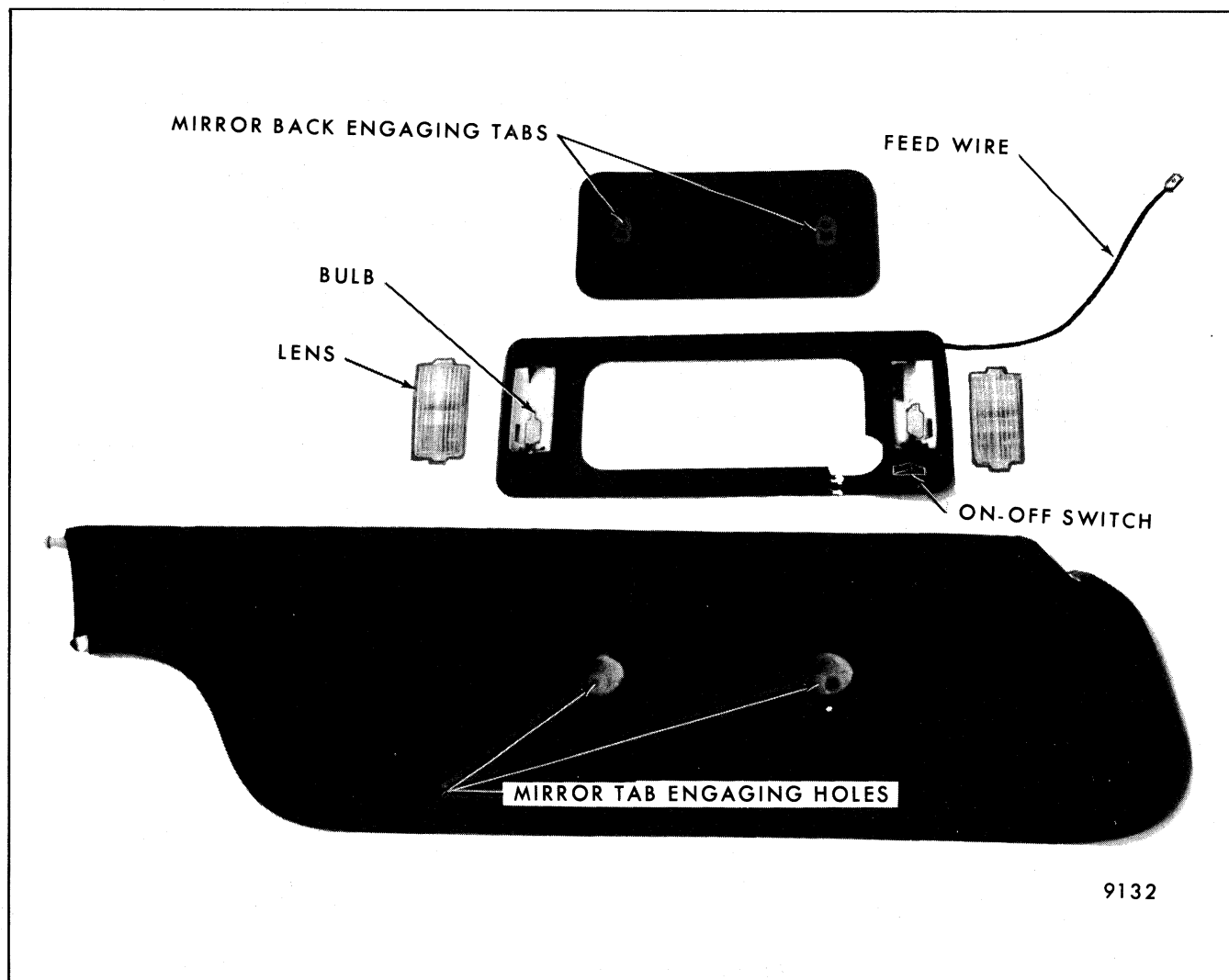


Fig. 8-11 - Vanity Mirror and Lamp Assembly

INTERIOR GARNISH MOLDINGS - ALL STYLES

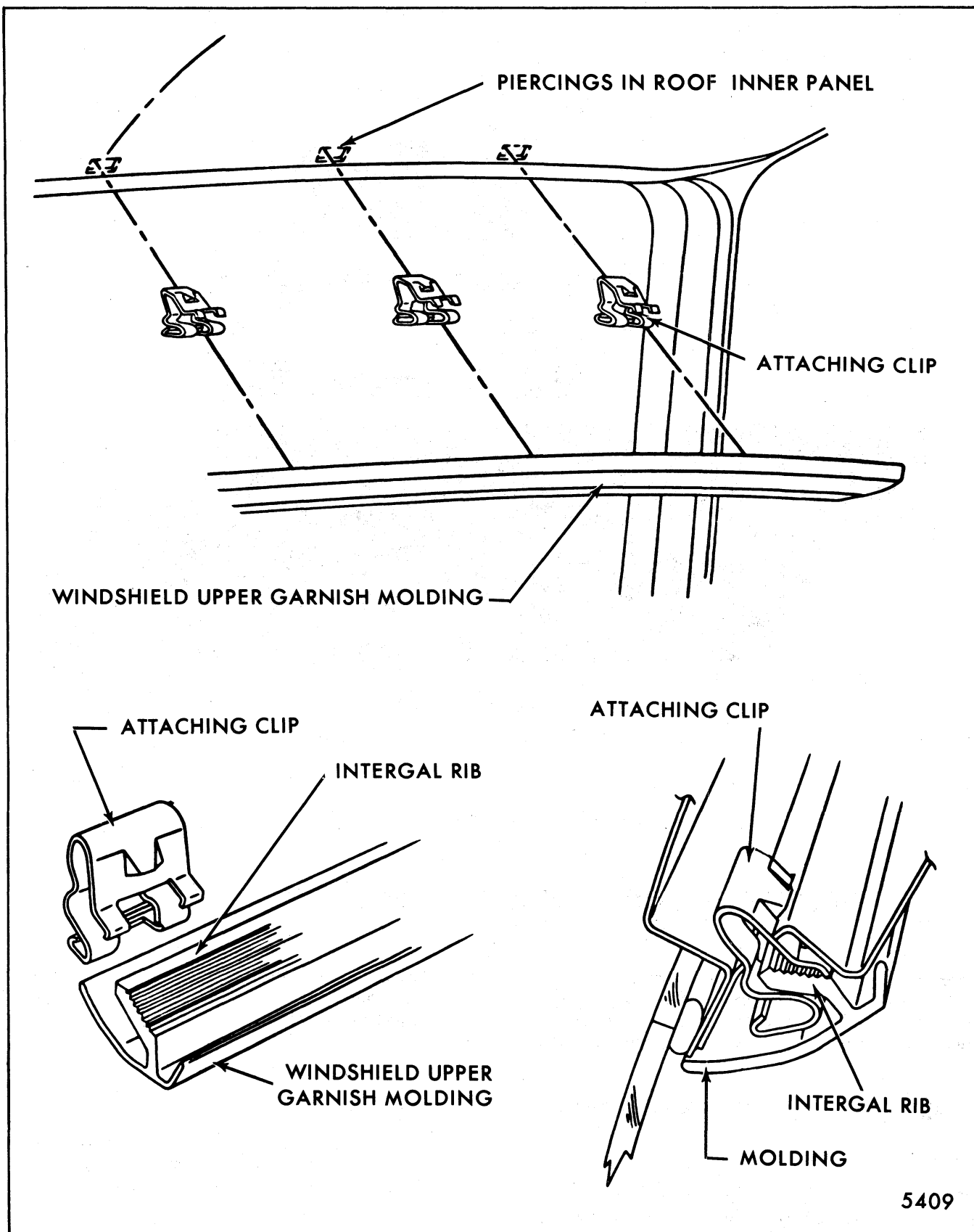
Interior garnish moldings are constructed of plastic or metal and painted to match the interior of the vehicle. Retention is accomplished with screws, metal and plastic clips or a combination of these.

WINDSHIELD UPPER GARNISH - All Styles

Removal and Installation

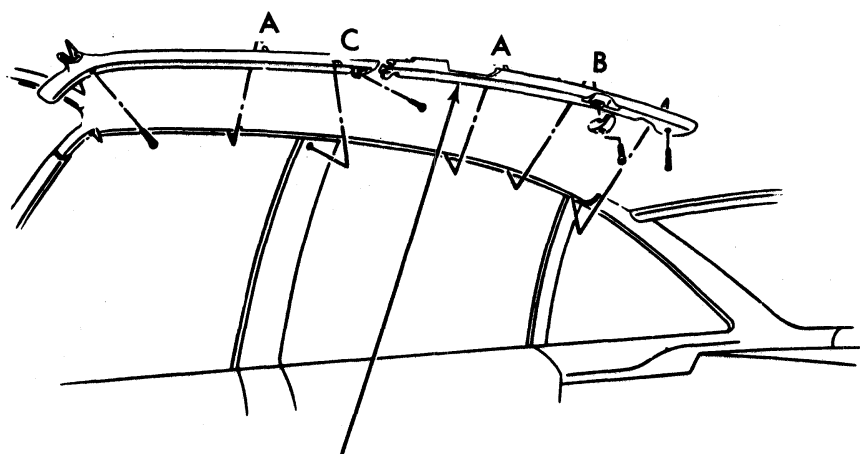
NOTE: On "A" styles the windshield upper garnish molding is retained by metal clips that fit over an integral plastic rib on the molding. The clip is then pressed into piercings in the roof inner panel to complete attachment of the molding.

1. Remove attaching screws at front ends of side roof rail garnish moldings and disengage ends of windshield upper garnish molding.
2. Pull down on molding to ascertain clip locations.
3. Insert tool J-2772 or equivalent between headlining and back of metal clip and pry clip forward to disengage clip and molding from roof inner panel (Fig. 8-12).
4. To install, align clips to piercings in roof inner panel and press molding firmly in place.

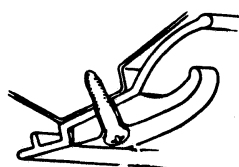
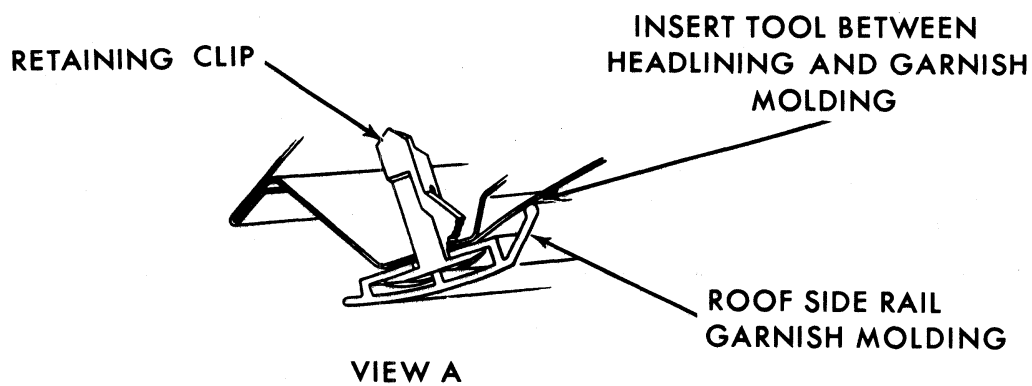


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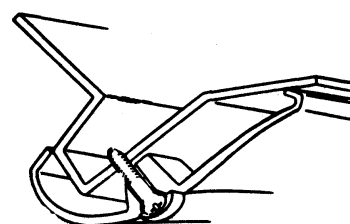
Fig. 8-12-Windshield Upper Garnish Molding - "A" Styles



ROOF SIDE RAIL GARNISH MOLDING



VIEW B



VIEW C

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Fig. 8-13-Roof Side Rail Garnish Molding Attachment - "A and B-35,45,69" Styles

5. On "B-C-E-F" styles to detach molding, remove attaching screws.
6. On "F-H" styles the windshield upper garnish molding is retained by inserting the corrugated rib of the molding into a slot along the roof inner panel. Remove attaching screws and pry or pull molding inboard with a flat-bladed tool (Fig. 8-8).
7. To install, align molding and press firmly in place.

SIDE ROOF RAIL GARNISH MOLDINGS - All Styles

Removal and Installation

1. Remove attaching screws where necessary.
2. On Chevrolet "B-47", Pontiac, Oldsmobile, Buick "B-57" and "A" styles pull molding down until base of plastic retaining clips is visible. Then insert tool J-24416 or equivalent and press center tab of clip outboard. Pry downward to disengage clip and molding from piercings in roof inner panel (Fig. 8-13).
3. To install, place clip in molding with tab of clip toward inside of body. Align clips to piercings in roof inner panel and press molding in place.
4. To remove moldings on "B-69,35 and 45" styles, grasp molding with one hand and pry downward with a flat-bladed tool.

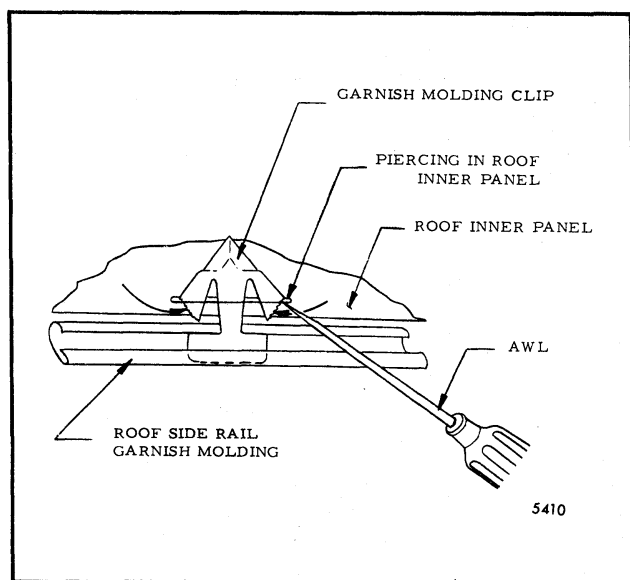


Fig. 8-14-Roof Side Rail Garnish Molding Attachment - "B-C-E" Styles

5. On "B-C-E-37,39,47,49, and 87" styles lower side glass.
6. Working from outside of vehicle, insert a screwdriver between garnish molding and side roof rail weatherstrip retainer to expose clip.
7. Using an awl or screwdriver, press downward alternately on front and rear tab of clip until clip disengages from roof inner panel (Fig. 8-14).
8. To install, align clips to piercings in roof inner panel and press molding firmly in place.
9. On "F, X and H" styles remove attaching screws and pry molding inboard with a flat-bladed tool to disengage integral plastic rib from slots in roof inner panel (View D, Fig. 8-8).
10. To install, reverse removal procedure.

BACK WINDOW UPPER GARNISH MOLDING - "A" Styles

Removal and Installation

The back window upper garnish molding on "A-29,37 and 57" styles is installed with screws and

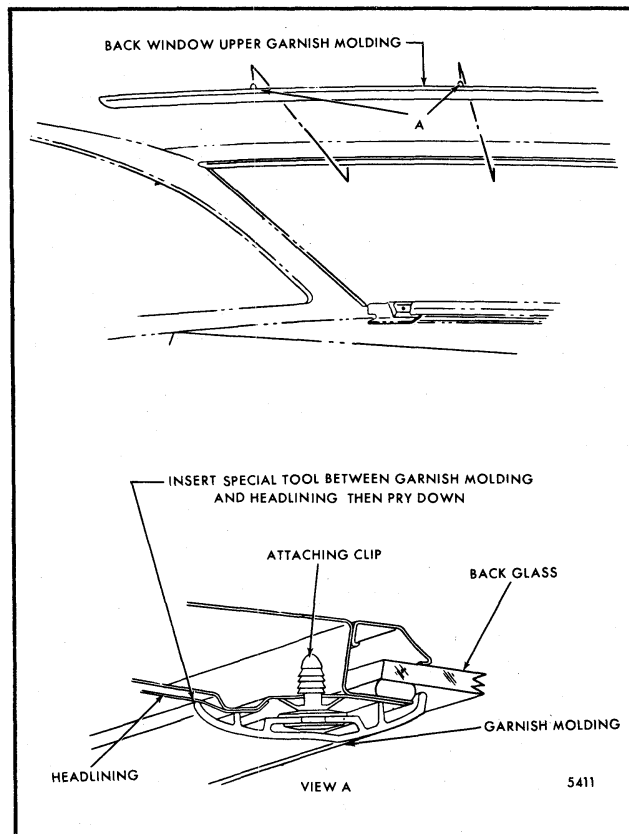


Fig. 8-15-Back Window Upper Garnish Molding - "A" Styles

plastic retaining clips that fit into round holes in the roof inner panel.

1. Remove attaching screws.
2. Insert tool BT-7323 or equivalent between headlining and molding, then pry downward to disengage clip and molding (Fig. 8-15).

3. On "80" styles remove attaching screws and pull downward on molding. Then insert tool J-24416 or equivalent and depress center tab of attaching clip rearward to disengage clip and molding (View A, Fig. 8-13).
4. To install, align clips to holes and press molding in place. Then install attaching screws.

EXTERIOR ROOF MOLDINGS

ROOF DRIP SCALP MOLDINGS

Removal and Installation - "A,B,C and E" Styles
(Refer to Figs. 8-20 and 8-21)

1. Remove side roof rail weatherstrips and weatherstrip retainers as described in Section 5 of the manual.
2. Remove screws securing roof drip scalp molding and remove from body.
3. To install, reverse removal procedure making certain that scalp molding is sealed to roof rail and weatherstrip retainer is sealed to scalp molding using medium-bodied sealer.

Removal and Installation - "H, F and X" (Refer to Fig. 8-22)

1. Starting at base of windshield pillar working upward and rearward, carefully pull molding away from body.
2. To install, apply adhesive (such as neoprene weatherstrip adhesive or equivalent) to cavity of molding and apply molding to correct position to body. Hold molding in position with tape for approximately 30 minutes to allow adhesive to set up.

UPPER BODY LOCK PILLAR FINISHING MOLDING - "H-27" and "X-27" With C04 Fabric Roof Cover Option (Refer to Fig. 8-23)

Removal and Installation

1. Remove screws securing molding to body lock pillar and remove molding from body.
2. To install, reverse removal procedure making certain molding is sealed to body lock pillar with medium-bodied sealer.

ROOF PANEL EMBLEMS

All emblems except on Oldsmobile "E" bodies and the Firebird emblem on Pontiac "F" bodies incorporate integral studs that snap into retaining clips in roof panel.

The Oldsmobile "E" body emblem incorporates integral studs and is retained by nuts inside of body. When removing or installing emblem, it is necessary to remove upper quarter trim panel.

The Firebird emblem on Pontiac "F" styles is retained by adhesive. To remove, apply heat using a heat gun.

CAUTION: *Be certain heat gun is moved in a circular motion and held a minimum of six inches from molding.*

When installing molding be certain panel is completely clean and alignment is correct.

UPPER ROOF MOLDINGS - LANDAU STYLES
- (Refer to Figs. 8-24 and 8-25)

The upper roof panel moldings that utilize a vinyl lace are retained to the body by studs, nuts and plastic slide-on clips. To remove molding it is necessary to remove the interior upper quarter trim panel to gain access to the nuts (refer to Section 6 of this manual for trim removal). After nuts have been removed, the molding can be slid off the plastic clips. To install, reverse the removal procedure.

On bodies equipped with moldings that do not utilize a vinyl lace, the moldings are retained by plastic clips which the molding snaps over. To remove, insert a flat-bladed tool such as a putty knife under molding and lift the molding off the clips.

CAUTION: *Be certain to protect adjacent painted surfaces to avoid damage to paint.*

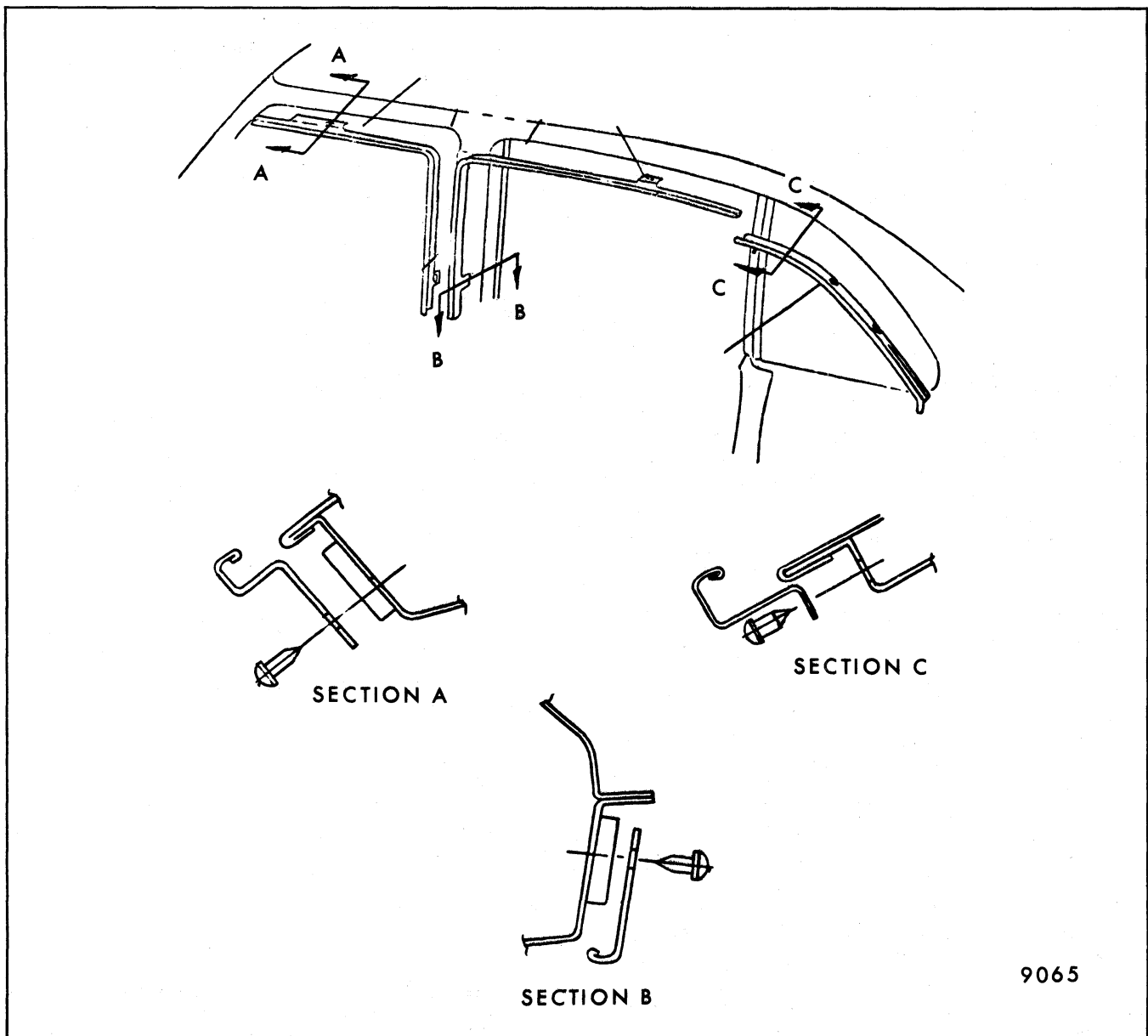


Fig. 8-20-Roof Drip Scalp Moldings "69" Styles

HALO MOLDINGS - (PONTIAC, BUICK AND CADILLAC)

Removal and Installation - Buick (Refer Fig. 8-26)

CAUTION: *Be sure to protect adjacent painted surfaces to avoid damage to paint.*

1. Insert a flat-bladed tool such as a putty knife under side molding and left molding from clips by starting at quarter belt and working upward.
2. Working forward, continue to unsnap molding along roof to approximately 6 to 8 inches rearward of front molding. Slide molding rearward off plastic slide-on clips and from under front molding.
3. Repeat steps 1 and 2 on opposite side.
4. To remove front molding (using flat-bladed tool), disengage molding from snap-on clips.
5. To install, reverse removal procedure.

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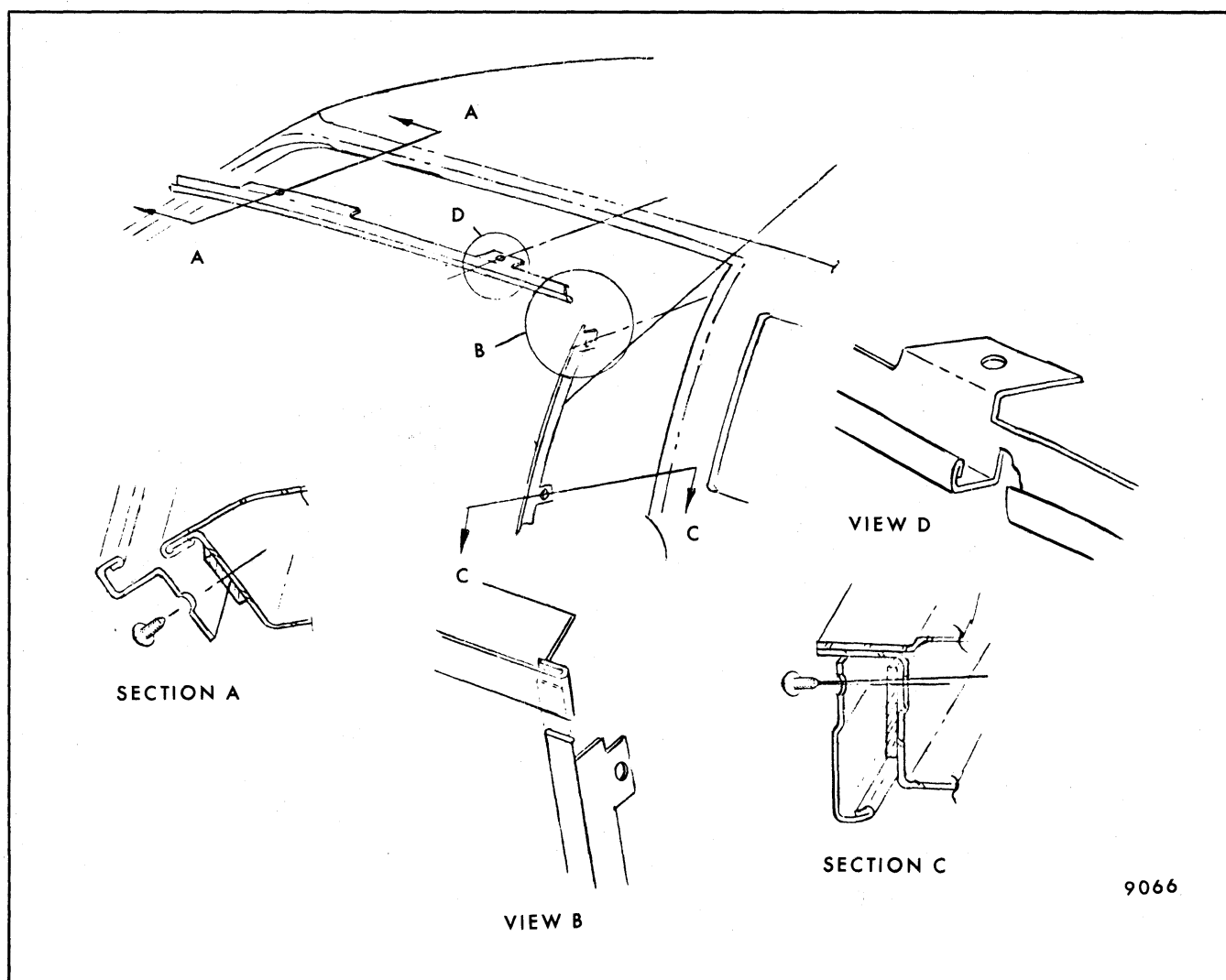


Fig. 8-21-Roof Drip Scalp Molding - All Except "69" Styles

Removal and Installation - Pontiac (Refer Fig. 8-27)

CAUTION: *Be certain to protect adjacent paint surfaces to avoid damage to paint.*

The side moldings as well as the front molding are removed by inserting a flat-bladed tool such as a putty knife under moldings and lifting the moldings off plastic snap-on type clips and integral screw and clips.

To install the moldings, position moldings over clips and snap molding in place.

Removal and Installation - Cadillac (Refer to Fig. 8-27)

CAUTION: *Be certain to protect adjacent paint surfaces to avoid damage to paint.*

The front molding as well as the front corner escutcheon (which the front and side molding telescope into) may be removed by inserting a flat-bladed type tool such as a putty knife under moldings and escutcheons and lifting off snap-on type clips.

The side moldings may be removed in the same manner except at the rear corner. To remove at rear corner the molding must be pulled forward to disengage from slide-on plate retainer.

The side rear vertical molding is retained at the top by a slide-on plate retainer, snap-on type clips in center and telescopes into an escutcheon at lower corner. The molding may be removed in the same manner as the side molding.

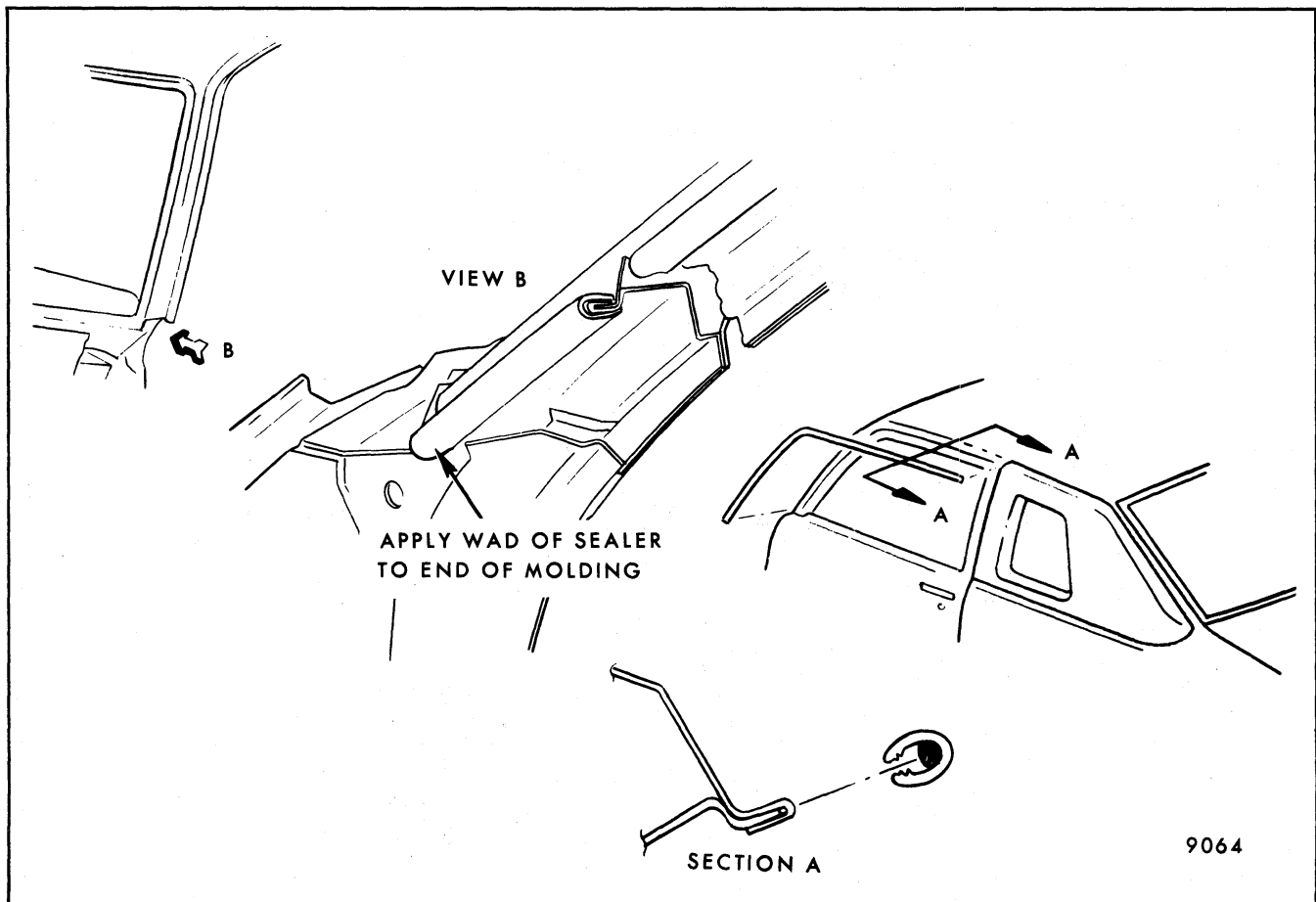


Fig. 8-22-Roof Drip Scalp Molding "X" Shown "F and H" Similar

QUARTER BELT MOLDINGS - All (Refer Fig. 8-28)

There are two basic types of moldings used on the quarter belt. Their removal is as follows:

1. On quarter belt moldings that utilize a vinyl lace, perform the following:
 - a. Working in rear compartment area, remove all nuts from studs that retain molding.
 - b. Remove escutcheon at center of back window.
 - c. Slide molding rearward and remove from body.
 - d. To install, reverse removal procedure making certain studs are sealed with medium-bodied sealer.
2. On quarter belt moldings that do not utilize a vinyl lace, perform the following:
 - a. Working in rear compartment area, remove all nuts from studs that retain molding.
 - b. Using a flat-bladed tool such as a putty knife, insert under molding and lift molding off clips.

CAUTION: *Be certain to protect adjacent painted surfaces to avoid damage to paint.*

NOTE: On styles with an escutcheon connecting the quarter belt and upper roof moldings, perform steps 2a and b, then slide molding out of escutcheon.

- c. To install, reverse removal procedure, making certain studs are sealed with medium-bodied sealer.

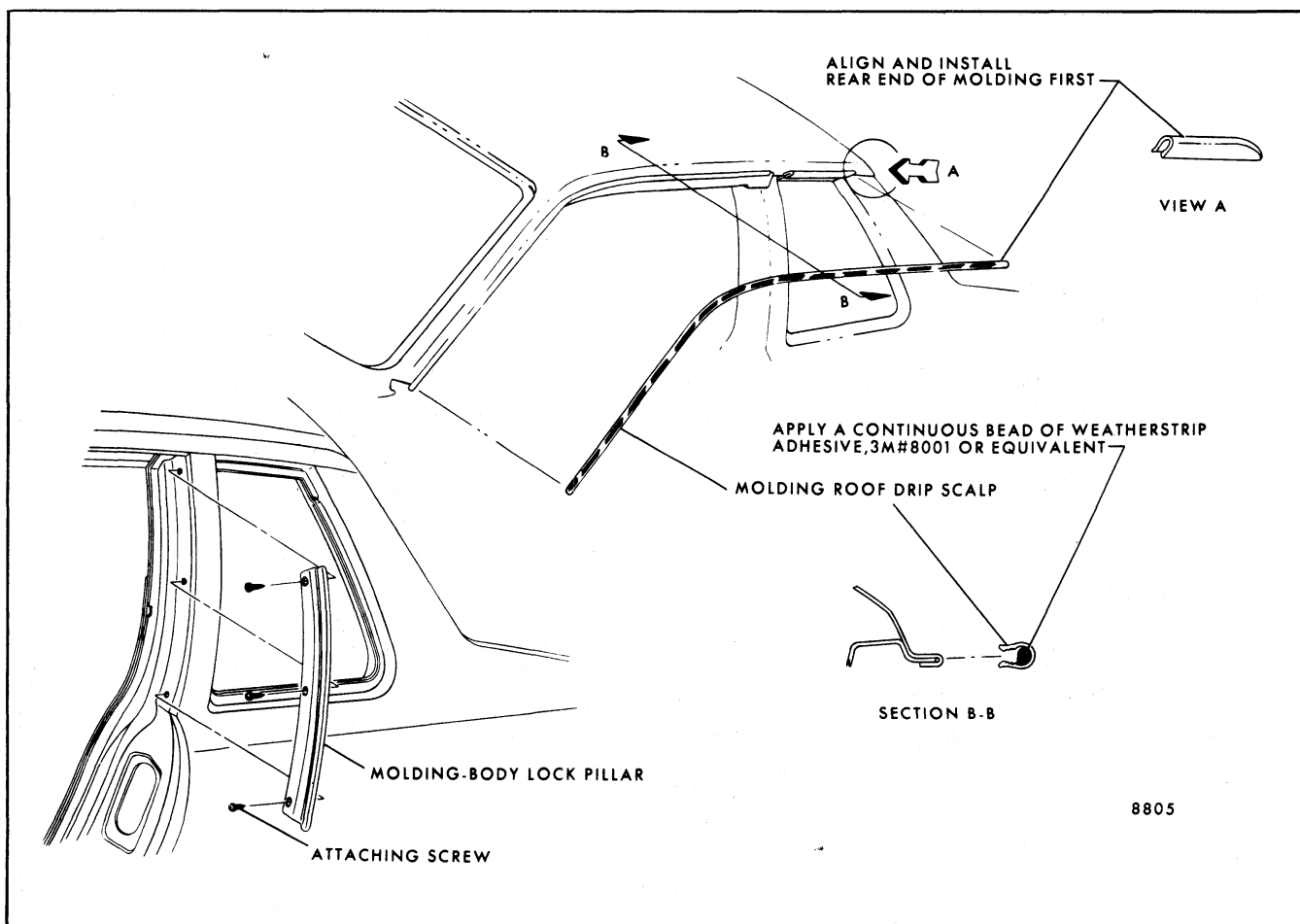


Fig. 8-23-Body Lock Pillar Molding "H-27" Shown, "X-27" Similar

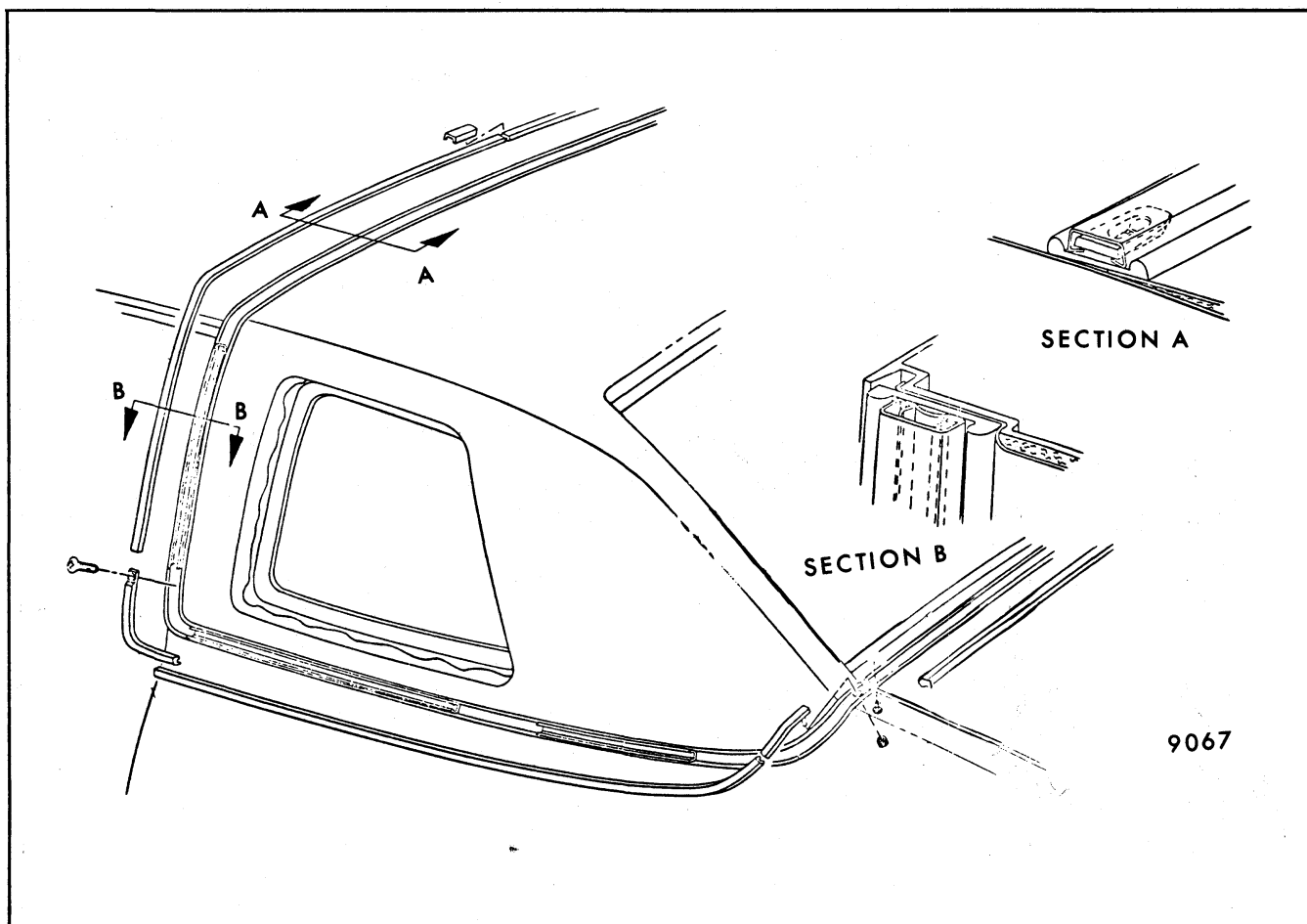


Fig. 8-24-Typical Upper Roof Molding with Vinyl Lace

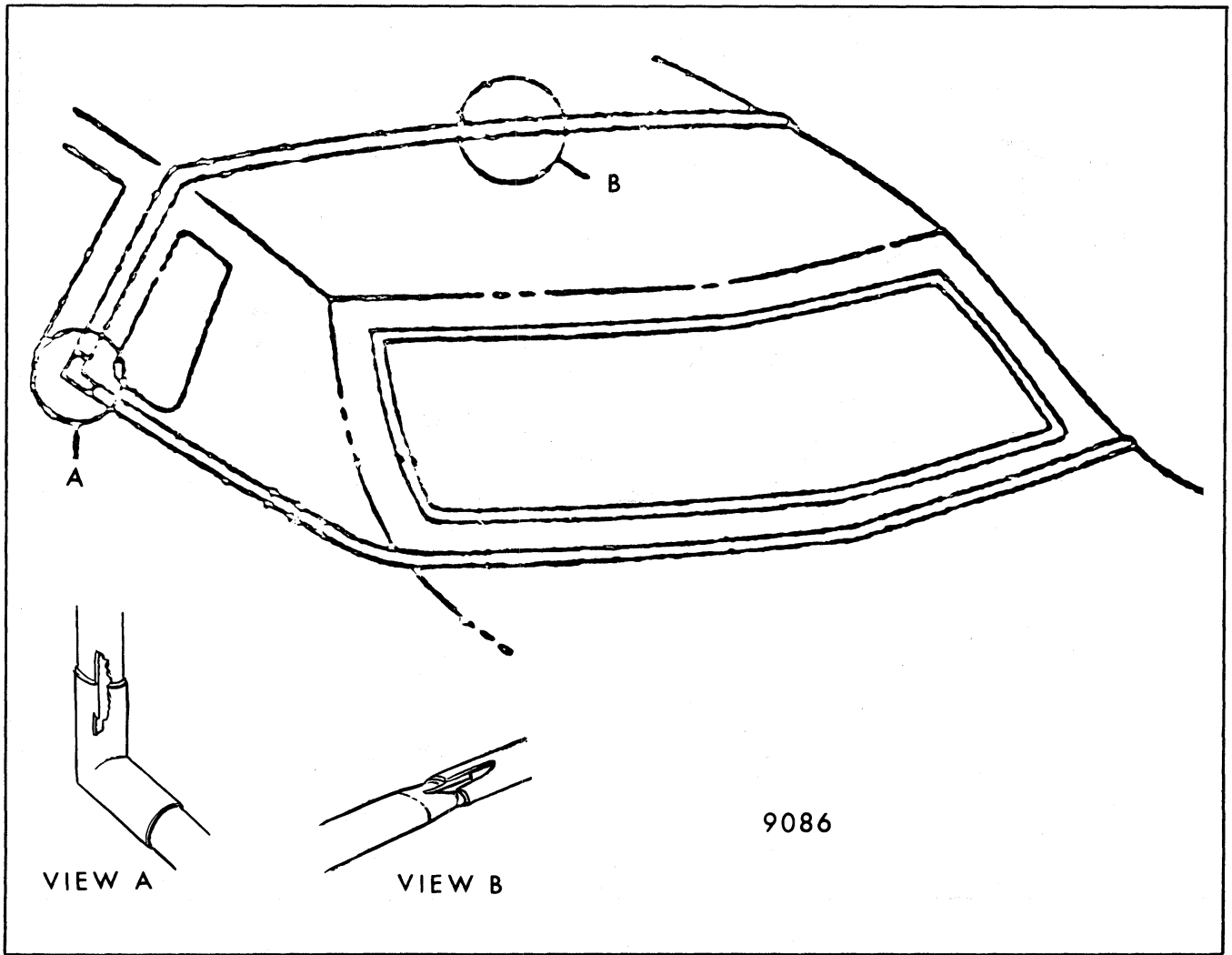


Fig. 8-25-Typical Upper Roof Molding without Vinyl Lace

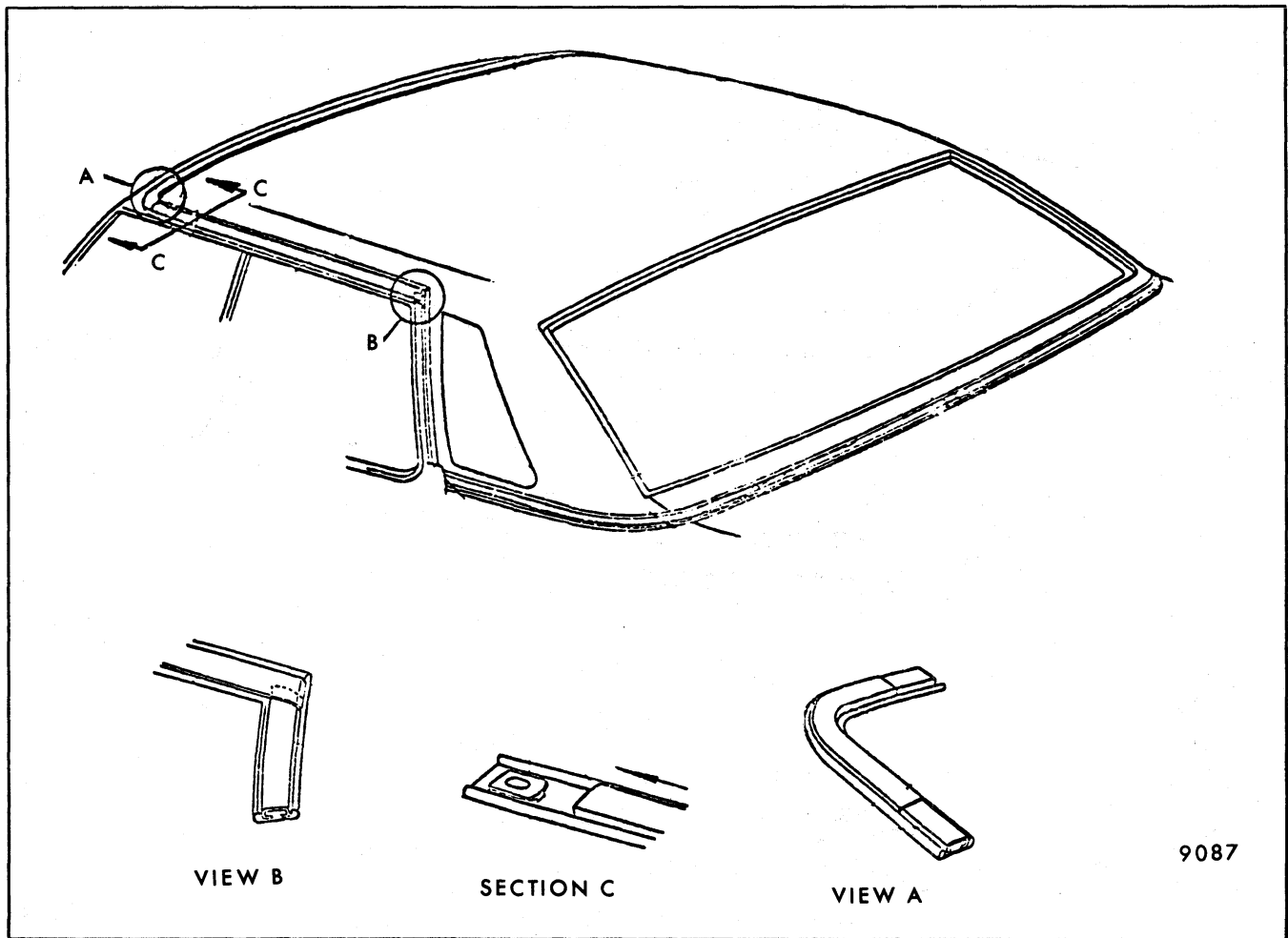


Fig. 8-26-Halo Roof Molding - Buick

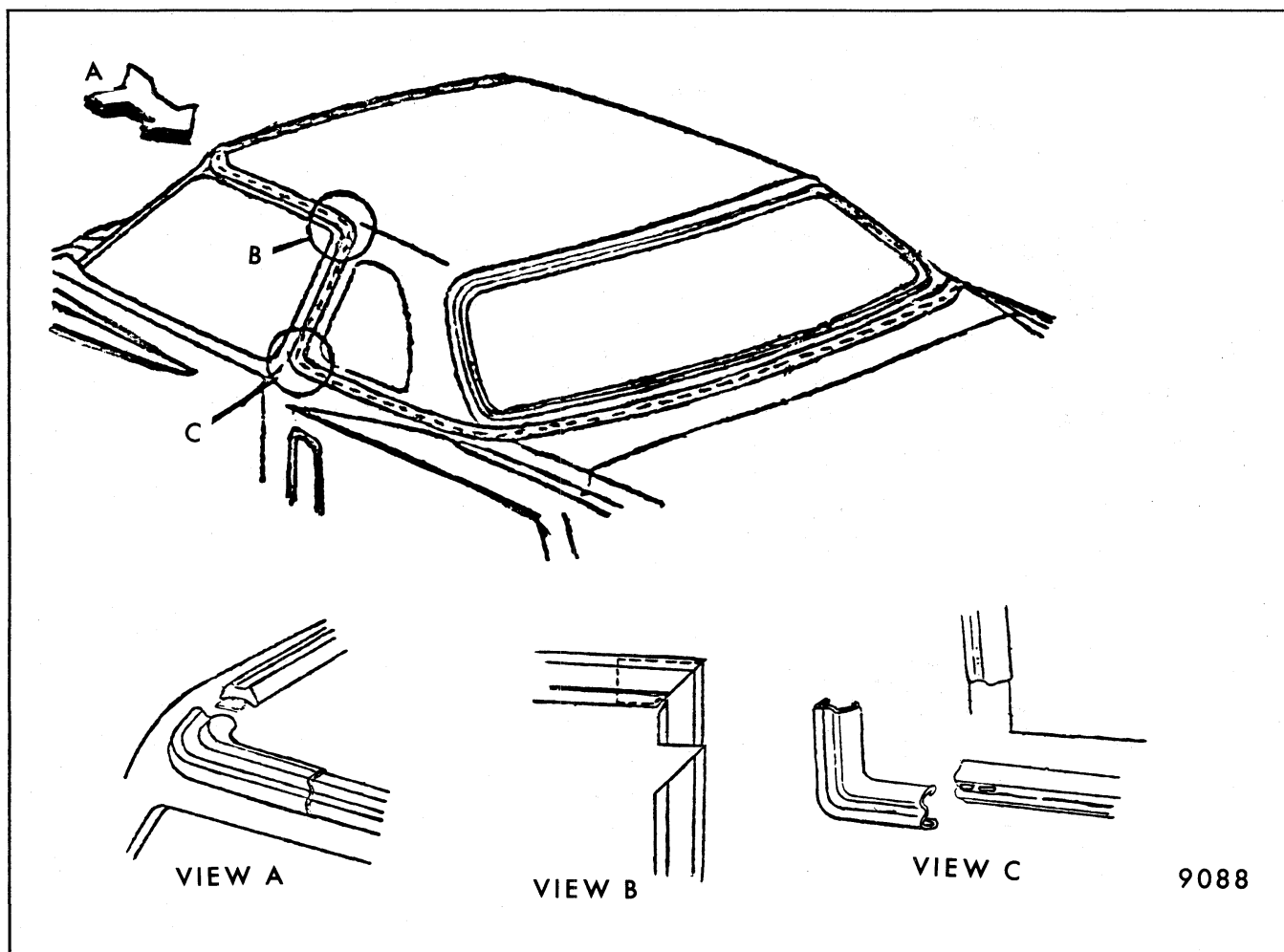


Fig. 8-27-Halo Roof Molding - Cadillac Shown Pontiac Similar

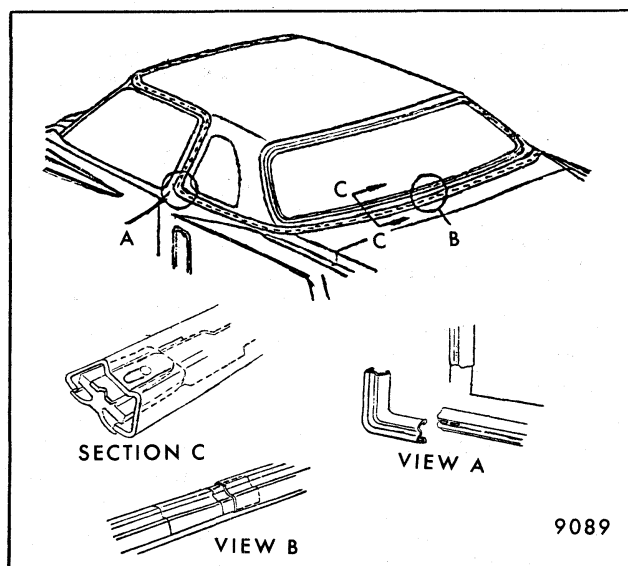


Fig. 8-28-Typical Quarter Belt Reveal Molding Without Vinyl Lace

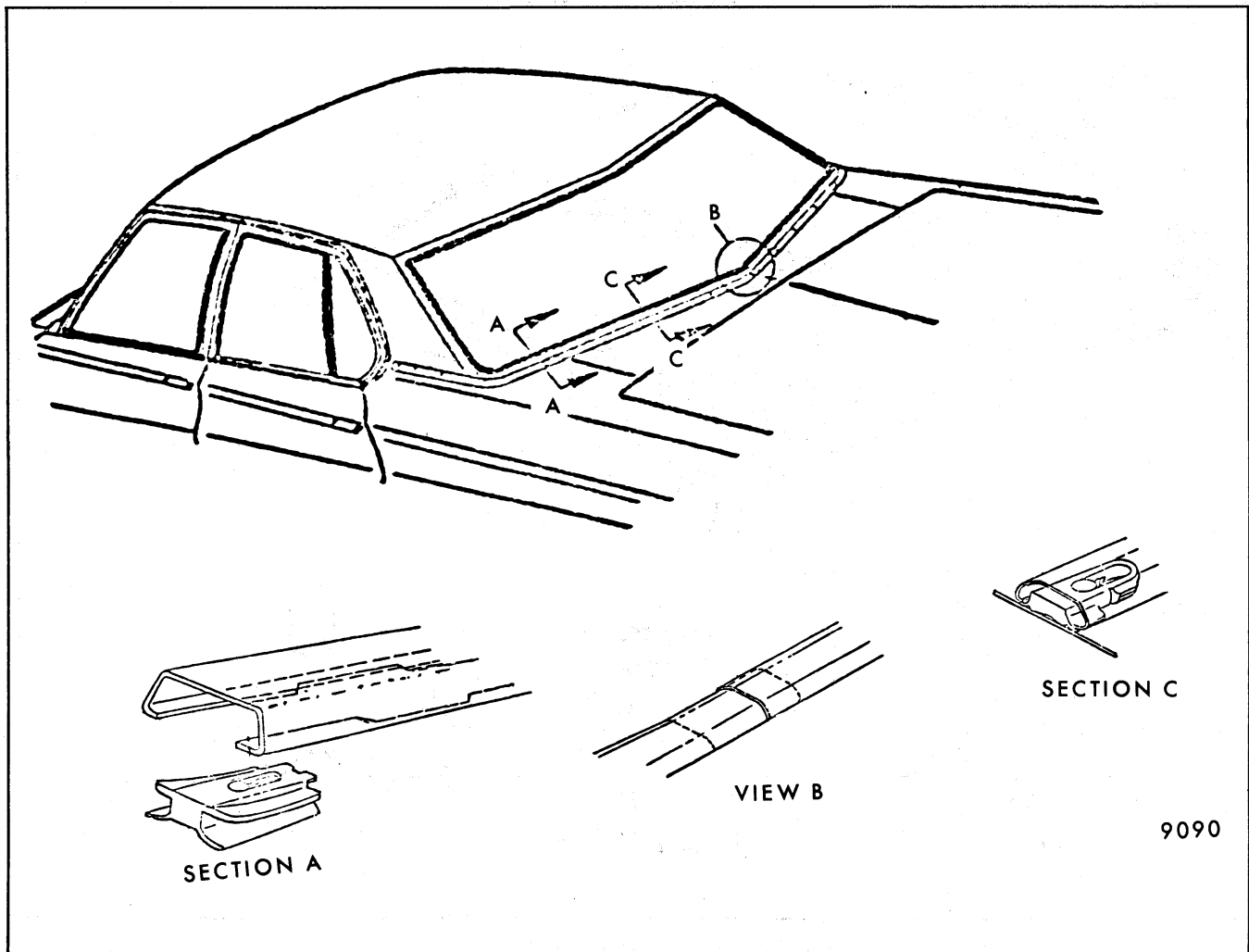


Fig. 8-29-Typical Quarter Belt Reveal Molding with Vinyl Lace

FABRIC ROOF COVER

DESCRIPTION

There are two basic types of vinyl roof covers: one is a vinyl coated fabric, the other is a vinyl coated material that has an integral pad. On styles utilizing the vinyl coated fabric, cover is cemented directly to the roof panel. On styles with the integral padded top, cover is either cemented directly to the roof panel or has an additional foam pad between cover and roof panel. When the foam pad is used, entire pad is cemented to roof panel, then the roof cover is cemented to pad in its entirety.

On styles where cover extends into the windshield and back window opening, cover is retained in the opening by adhesive and one or more of the following: clips installed over weld-on studs, drive nails, reveal molding and finishing lace. When cover ex-

tends in and around drip molding or folds around roof panel flange, it is retained by adhesive and drip scalp moldings, weatherstrip retainers or finishing moldings.

On styles equipped with roof panel moldings, cover is retained under the moldings by adhesive and clips installed over weld-on studs.

Fabric roof option codes are referred to in all removal and installation procedures. For purpose of identification, refer to the following.

1. CBI Option - Landau Type (Front or Rear Half) without Pad
2. CB4 Option - Landau Type (Rear Half) with Integral Pad

3. C04 Option - Landau Type (Rear Half) Integral Pad Plus Foam Pad
4. C08 Option - Full Roof Cover without Pad
5. C09 Option - Full Roof Cover - Integral Pad
6. CB5 Option - Full Roof Cover - Integral Pad Plus Foam Pad
7. CB6 Option - Full Roof Cover - Integral Pad with Halo Molding
8. CB7 Option - Landau Type (Front Half) Integral Pad
9. CA9 Option - Full Roof Cover - Integral Pad Plus Foam Pad with Halo Moldings

Removal of Components Parts - All Fabric Roof Cover Options

1. The following parts must be removed prior to removing fabric roof cover.
 - a. Upper and both side windshield and back window reveal moldings (except on styles where the cover does not extend into windshield opening or back window opening).
 - b. Roof drip molding scalps, weatherstrip retainers or finishing moldings (when cover extends into drip molding or folds around roof panel flange).
 - c. Rear quarter belt reveal moldings and rear end belt reveal moldings.
 - d. Roof cover retainer to rear body lock pillar on styles so equipped.
 - e. Roof extension panel emblem, name plate assembly or opera light on styles so equipped.
 - f. All roof panel moldings and finishing trim lace on styles so equipped.
 - g. On "B" body station wagon styles, remove back body opening and quarter window reveal moldings.
 - h. Quarter window reveal moldings on styles so equipped.
 - i. Stationary quarter window on styles so equipped.
 - j. Louver quarter stationary window on styles so equipped.

- k. Sliding sunroof panel when cover for panel is being replaced. Retract sliding panel if fabric roof cover only is being replaced and remove tape and weatherstrip from opening.
 - l. Lower back window filler on styles so equipped (Fig. 8-49, View "G").
 - m. Louver in quarter sail area on styles so equipped.
 - n. Vista vent glass and weatherstrips on styles so equipped.
2. Remove reveal molding clips across top and sides of windshield, quarter or back glass openings. On styles where fabric cover extends below back window, remove reveal molding clips along bottom of back window opening. Clean off any excess adhesive material adjacent to fabric roof cover material.
 3. On "A-29" styles drill out four pop rivets and remove retainers (Fig. 8-31).

NOTE: In the event a repair type clip has been installed and retaining screw is not accessible, carefully trim roof cover around clip.

FABRIC ROOF COVER REMOVAL - ALL OPTIONS EXCEPT C04, CB5 and CA9 OPTION

1. Remove all drive nails that are present in windshield and back window opening.

CAUTION: When removing drive nails, the edge of glass must be protected. Two to three layers of cloth body tape should provide the necessary protection.

NOTE: Drive nails can best be removed by first driving a screwdriver or suitable tool under the nail heads to loosen them. Diagonal cutters or similar tool can then be used to grasp nails and twist them out. Unnecessary enlargement of holes in roof panel should be avoided.

2. Completely mask off areas of roof panel which are not covered by fabric cover. Mask upper windshield or reveal moldings, windshield glass, back window, roof opening on sunroof option, all doors and flat painted surfaces (hood, rear compartment lid, etc.).
3. Apply heat to edges of roof cover to aid loosening and removal of cover. Heat can be applied

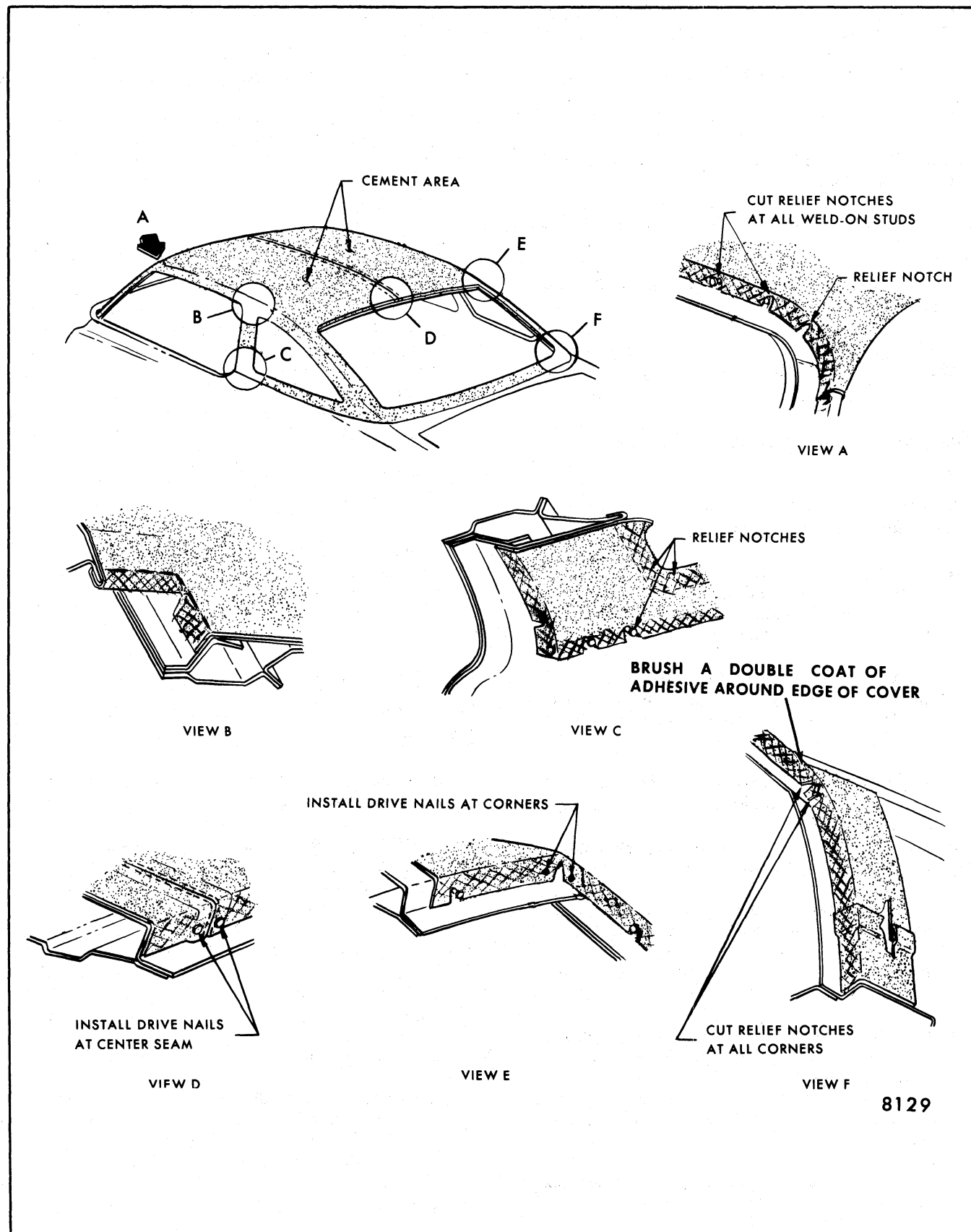


Fig. 8-30-Typical Fabric Roof Cover Installation - "A" Styles

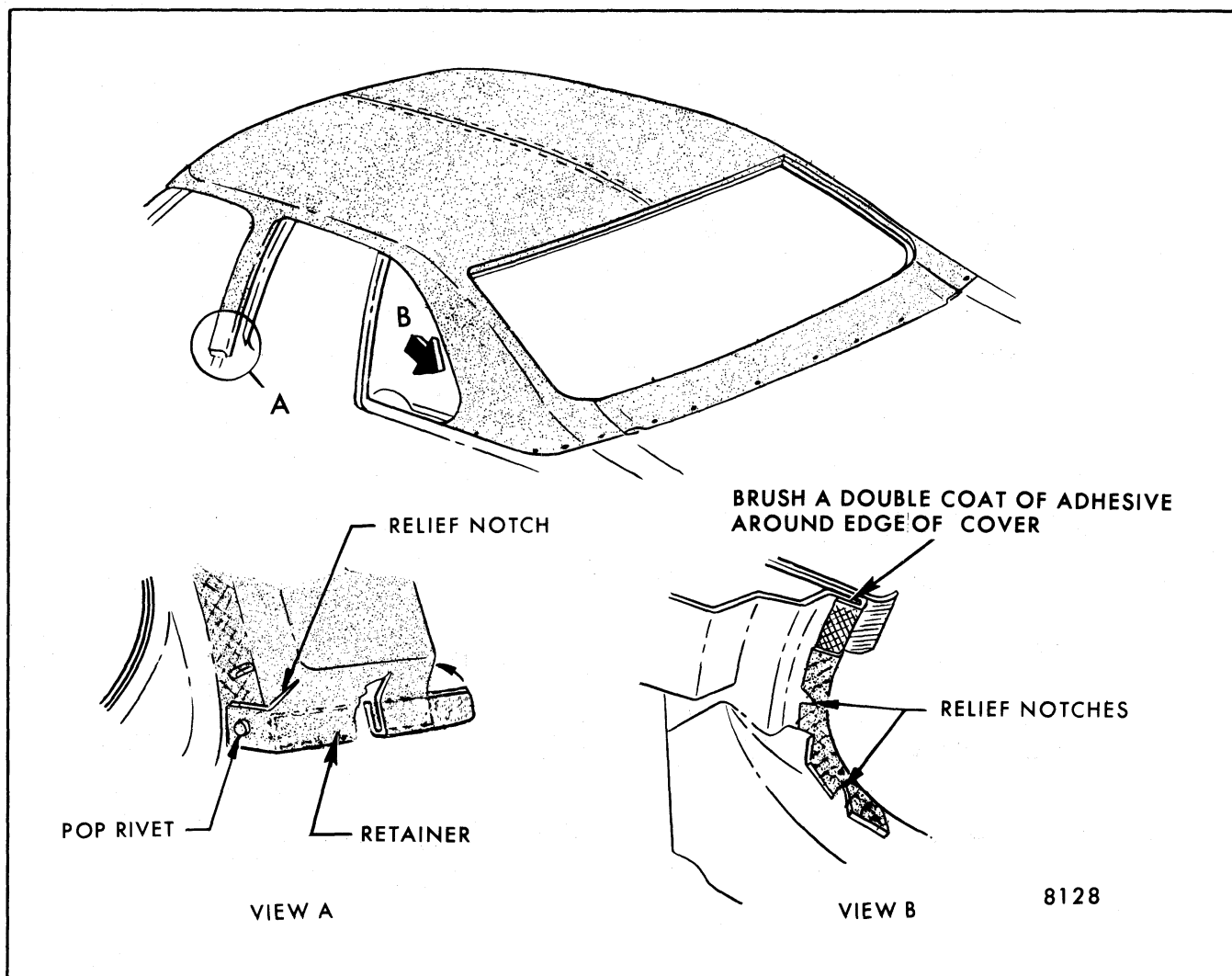


Fig. 8-31-Fabric Roof Cover Installation at Center Pillar and Quarter Window - "A-29" Styles

with a hot air gun (Fig. 8-60) held approximately one inch from the cover and rotated in a circular motion. Heat lamps can also be utilized if held a minimum of eighteen inches from the cover.

CAUTION: *Excessive heat (over 200 degrees F) may cause the roof cover to lose its grain, blister or become shiny.*

4. Loosen all cemented edges of roof cover, then carefully remove cover from remaining cemented area of roof panel.
5. Where nonpadded covers have been removed, check all cementing surfaces on body to insure a smooth surface. Cementing surface must be smooth to prevent "highlighting" of excess cement through roof cover after new cover has been installed. Clean off old cement as required. In the event any metal finishing is performed on roof panel, repaired area must be painted.
6. Where integral padded covers have been removed, hand-wire brush areas where excessive padding and/or adhesive build-up is evident. Trim excess material at windshield and back window opening. In the event any metal finishing is performed on roof panel, repaired area must be painted.

NOTE: A xylol solvent, such as 3M Adhesive Cleaner or equivalent, should be used to remove or smooth out excess old cement. Apply solvent and allow to soak before rubbing.

CAUTION: *Be certain to follow manufacturer's directions when using cleaner.*

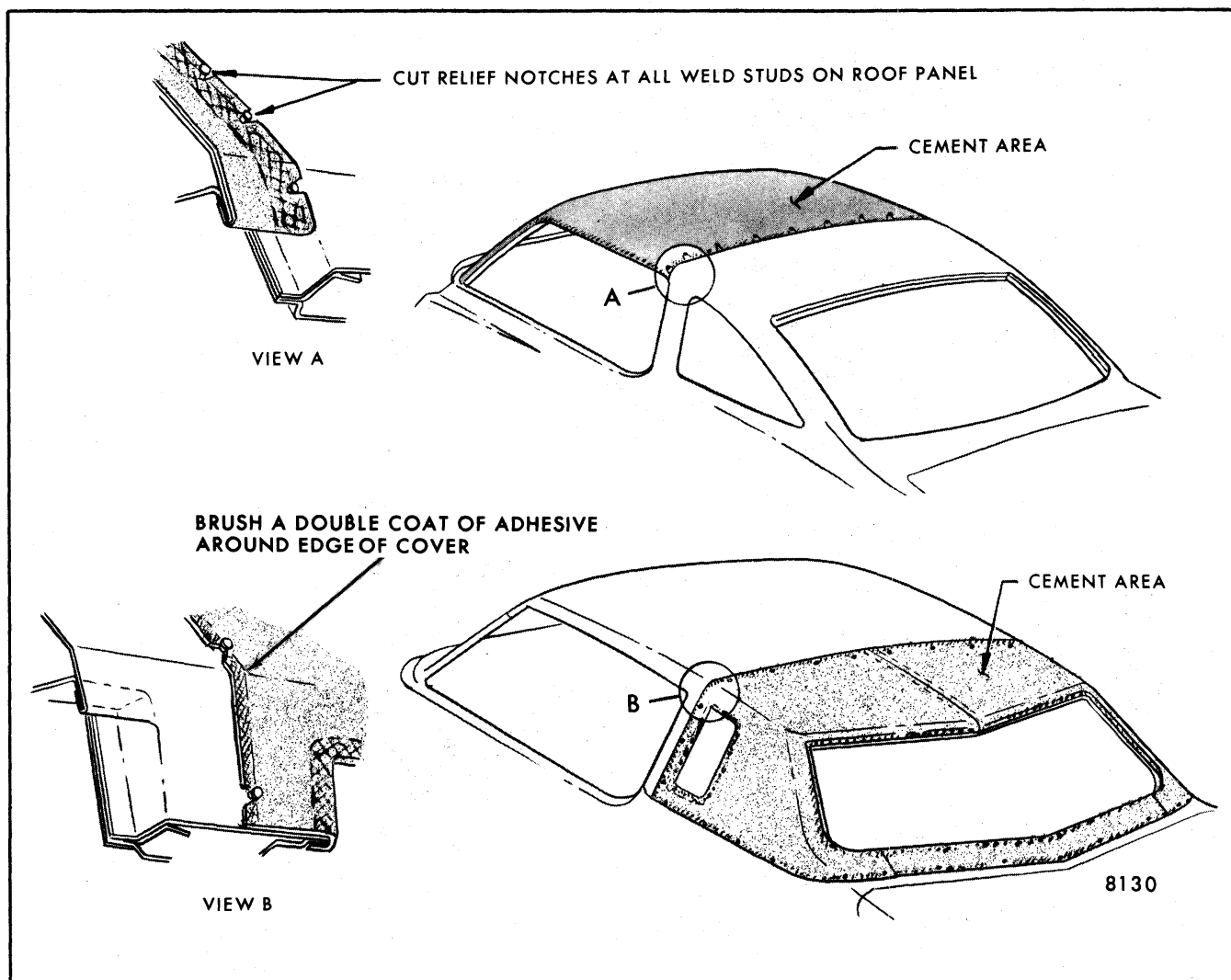


Fig. 8-32-Typical Landau Fabric Roof Cover Installation (CB1 Option)

NOTE: It is not necessary to clean off all old cement or padding, however, enough should be removed to prevent highlighting through roof cover.

Installation - All Except C04, CB5 and CA9 Option

1. Where possible, install new cover at room temperature (approximately 72 degrees) to permit easier fitting and removing of wrinkles from new cover assembly. Fabric roof cover pliers (Fig. 8-38) will aid in removing wrinkles.

NOTE: The integral padded fabric roof cover cannot be pulled to the extent that a nonpadded cover can be pulled to compensate for a misaligned condition. Therefore, it is extremely important that before installation (cementing) the cover be properly positioned on the roof, then reference marked for centering and fore and aft positioning.

2. If the old roof cover was properly aligned and when removed its french seam imprint (center seam or feature seam around back window) can be clearly defined on the roof panel, the imprint may be used as reference when installing new roof cover.
3. On all styles except CB4, if seam imprint is not visible, determine centerline of roof panel by marking center points on windshield or on roof panel (landau installation) and back window with tape or equivalent.
4. To locate and mark the center of roof cover without a center seam, position cover on roof panel and fold cover lengthwise at center location. Mark center at front and rear of cover. On station wagon styles mark center location on right and left body lock pillar.

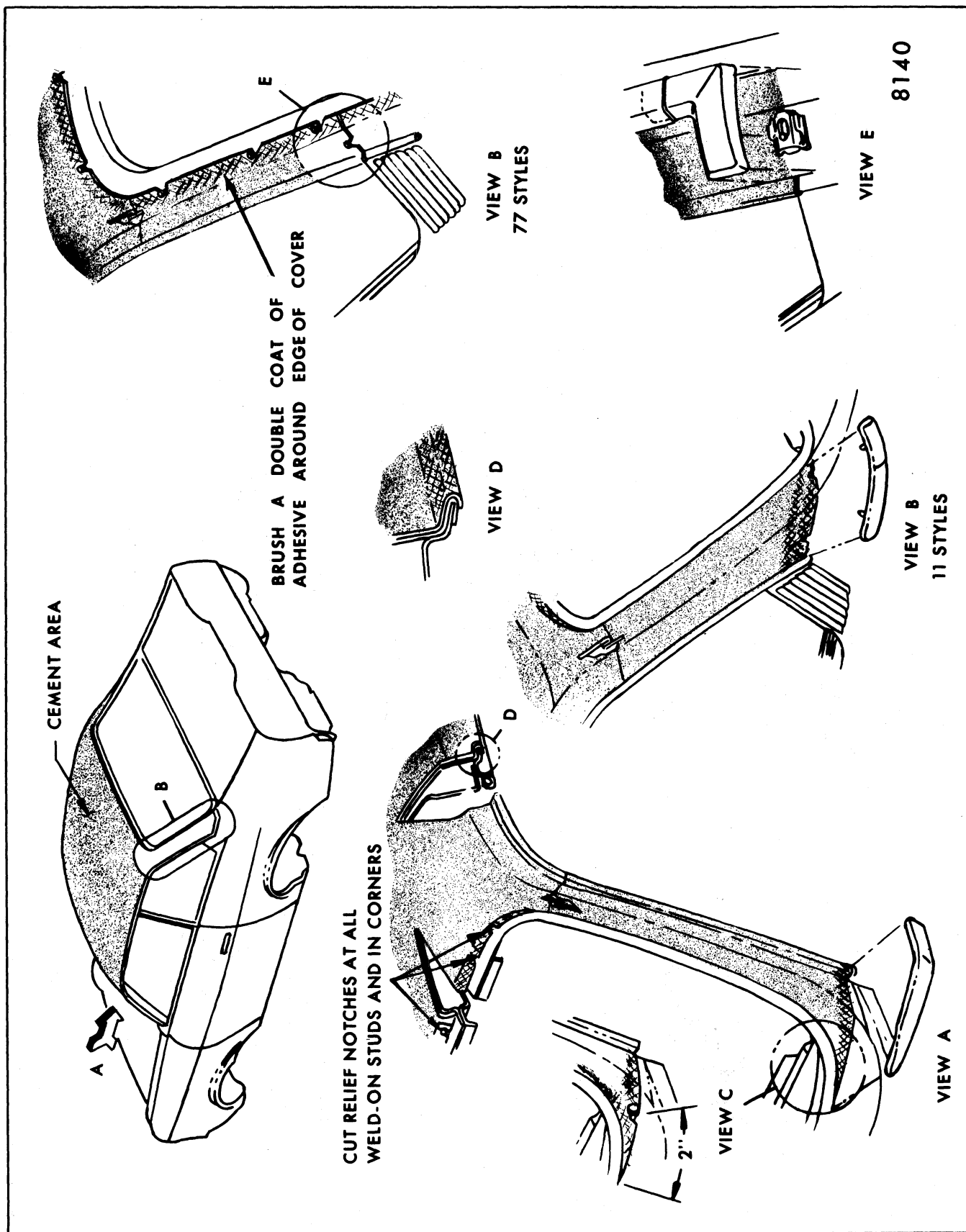


Fig. 8-33-Fabric Roof Cover Installation - "H" Bodies - C09 Option (Except "27" style)

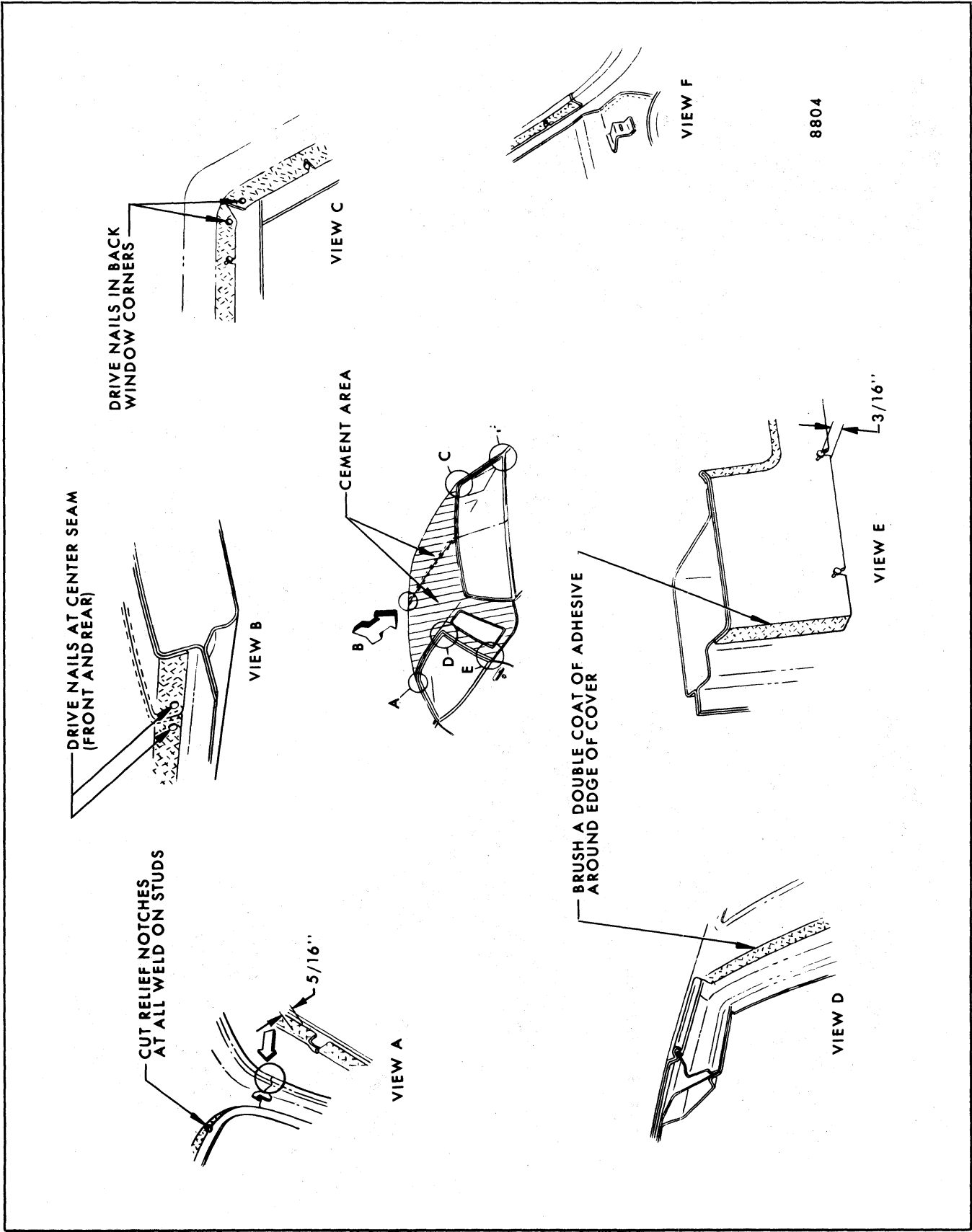
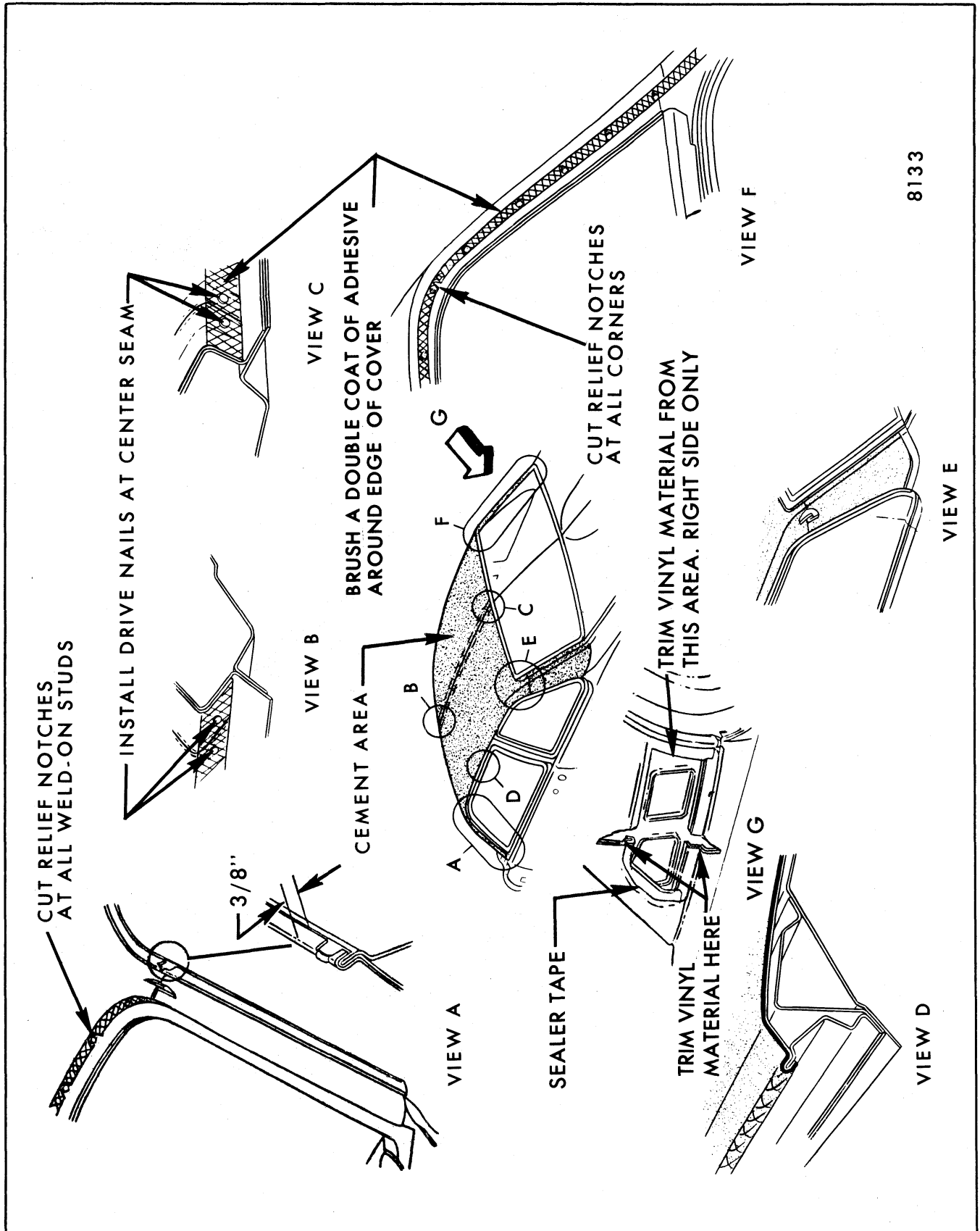


Fig. 8-34-Fabric Roof Cover Installation - "H-27" Style - C09 Option



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Fig. 8-35-Fabric Roof Cover Installation - "X" Bodies - C08 and C09 (Except "27" Style with Formal Quarter Window)

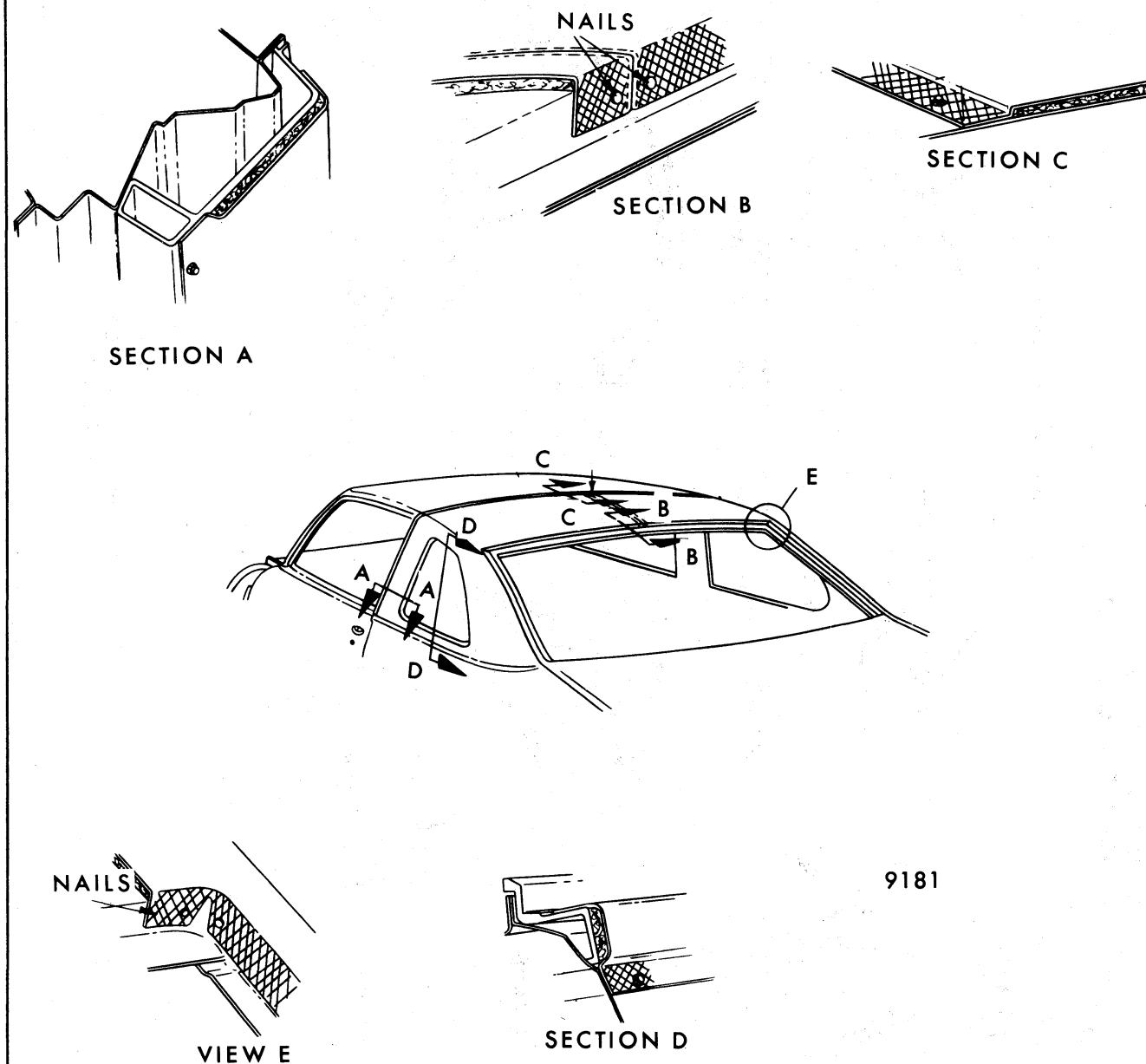
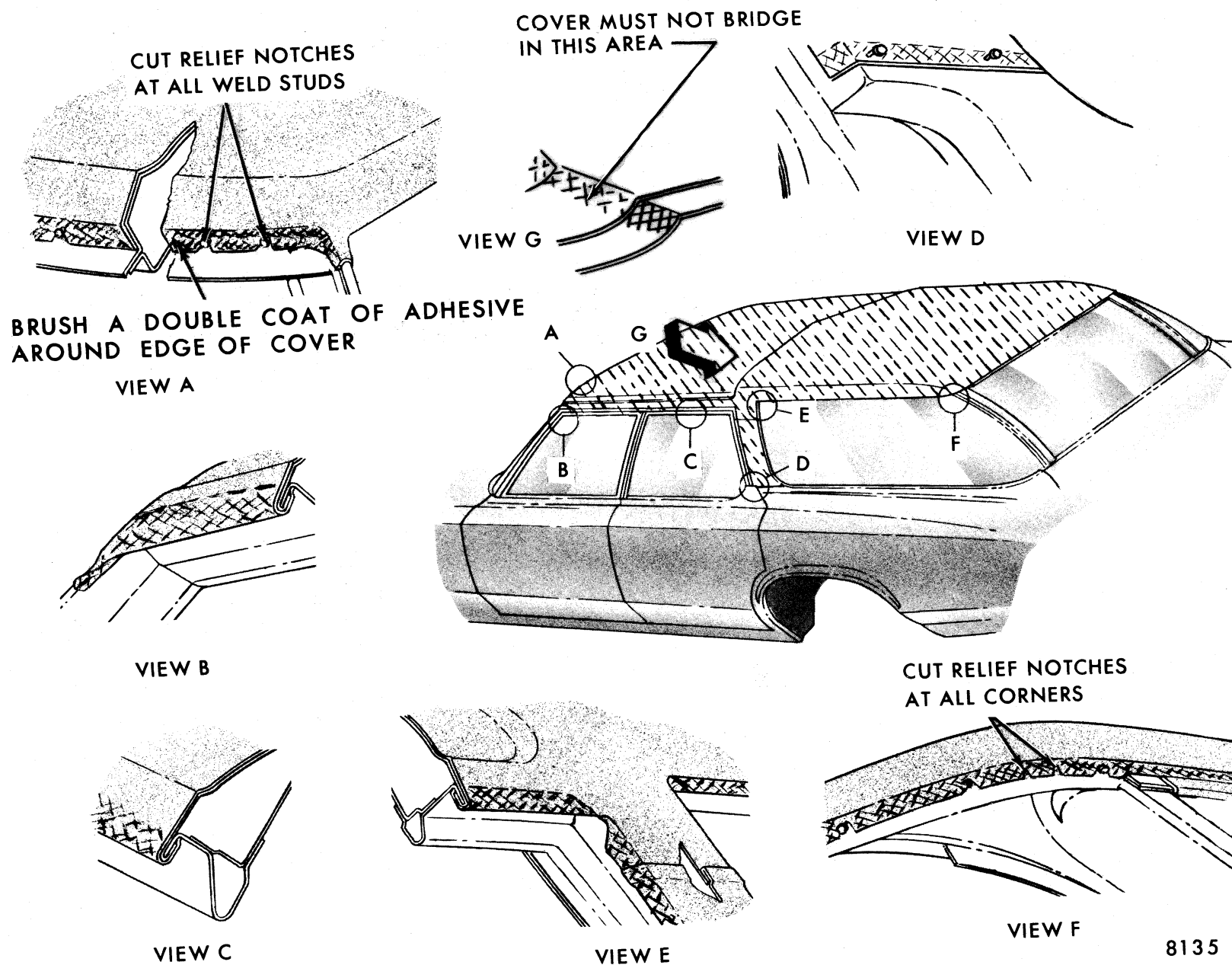


Fig. 8-36-Fabric Roof Cover Installation - "X-27" Styles with Formal Quarter Window - C04 Option



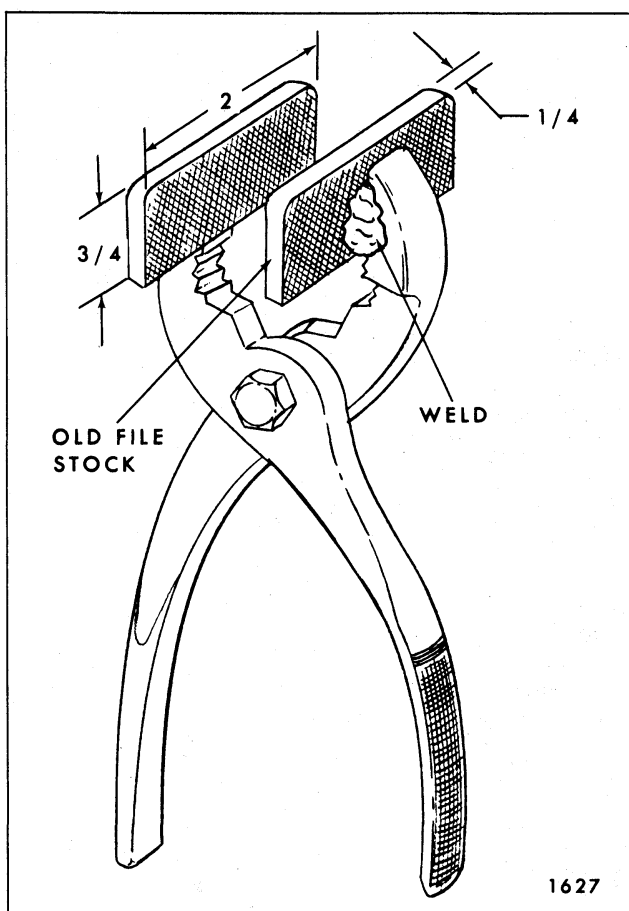


Fig. 8-38-Fabric Roof Cover Pliers

5. If CB4 landau back window feature seam imprint from old roof cover is not visible on roof panel, use a suitable marking pencil and mark location of seam 2" plus 1/4 minus 0 outside of window opening.
6. On CB4 landau option perform the following.
 - a. Fold rear portion of cover forward to expose back window feature seam and corresponding reference on roof panel.
 - b. Brush an even application of adhesive along horizontal seam and to corresponding surface on roof panel. Do not include vertical side seams. Excessive adhesive will trap solvents under the cover and may cause blistering due to delamination of vinyl from fiber backing.
 - c. Allow adhesive to become tacky and with the aid of a helper, align and "slick" cover in place, eliminating all wrinkles.
 - d. Expose vertical feature seam of cover, brush adhesive along seam and to corresponding metal surface.

- e. Align seam to the reference mark, pull and "slick" cover in place, eliminating wrinkles.
- f. Repeat operation on opposite side.
- g. Apply adhesive to lower valance, align valance and "slick" in place.
- h. Fold cover rearward, brush an application of adhesive approximately 6" wide adjacent to cemented area.
- i. Start at outboard corner and covering a small area at a time pull cover taut and "slick" in place. Fold cover rearward and apply adhesive to exposed portion of roof cover and roof panel. Allow adhesive to become tacky and cement cover to front of roof.

NOTE: Make certain cover is free of wrinkles. Fabric roof cover pliers may be used in aiding removal of wrinkles.

7. On all styles except CB4 option perform the following:
 - a. Fold cover lengthwise to expose approximately a 4" wide area along center of cover and corresponding cementing surface on roof panel. This operation does not include integral padded landau roof cover (CB4 Option) with french seam around back window.
 - b. Brush an even application of nitrile nonstaining adhesive such as Hughes HC-4183, 3M 8064 or equivalent along center of cover and to corresponding surface on roof panel. Allow adhesive 3 to 5 minutes to become tacky and cement center area to roof panel. Excessive adhesive will trap solvents under the cover and may cause blistering due to delamination of vinyl from pad.

NOTE: Make certain cover is free of wrinkles and properly aligned; however, do not pull too hard on material as padding could separate causing wrinkles and/or highlights. Fabric roof cover pliers, or an equivalent tool, may be used in aiding removal of wrinkles.

- c. To install remainder of roof cover, fold one half of cover back along center seam, apply adhesive to back of cover and to roof panel. Do not include quarter upper area.

NOTE: It is recommended that the vinyl trim adhesive be applied with a spray gun. As an alternate method, a brush or roller may be used. If spraying method is utilized, a spray gun along with the following equipment should be used.

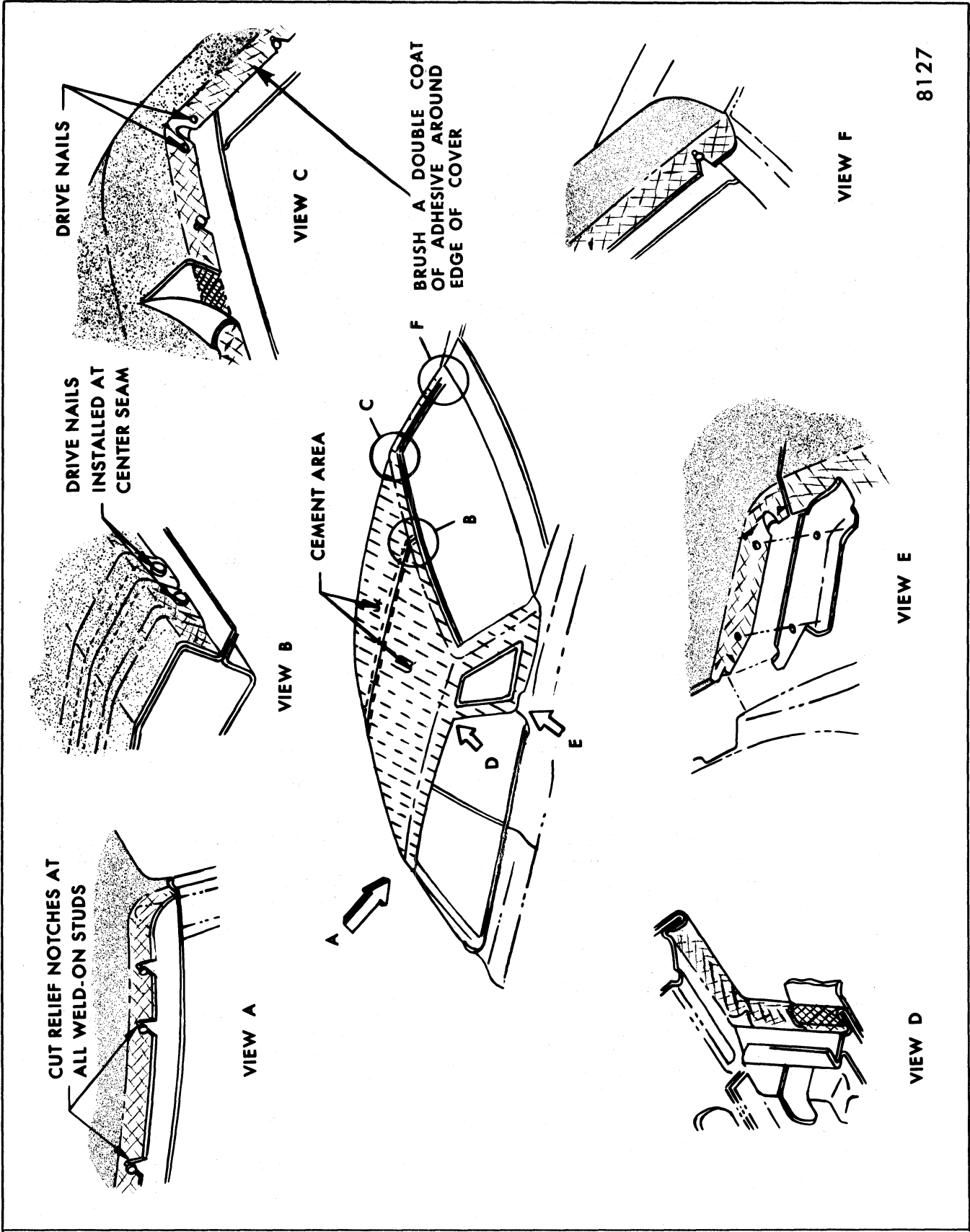


Fig. 8-39-Typical Fabric Roof Cover Installation Without Roof Panel Moldings - "B and C" Styles - C09 Option

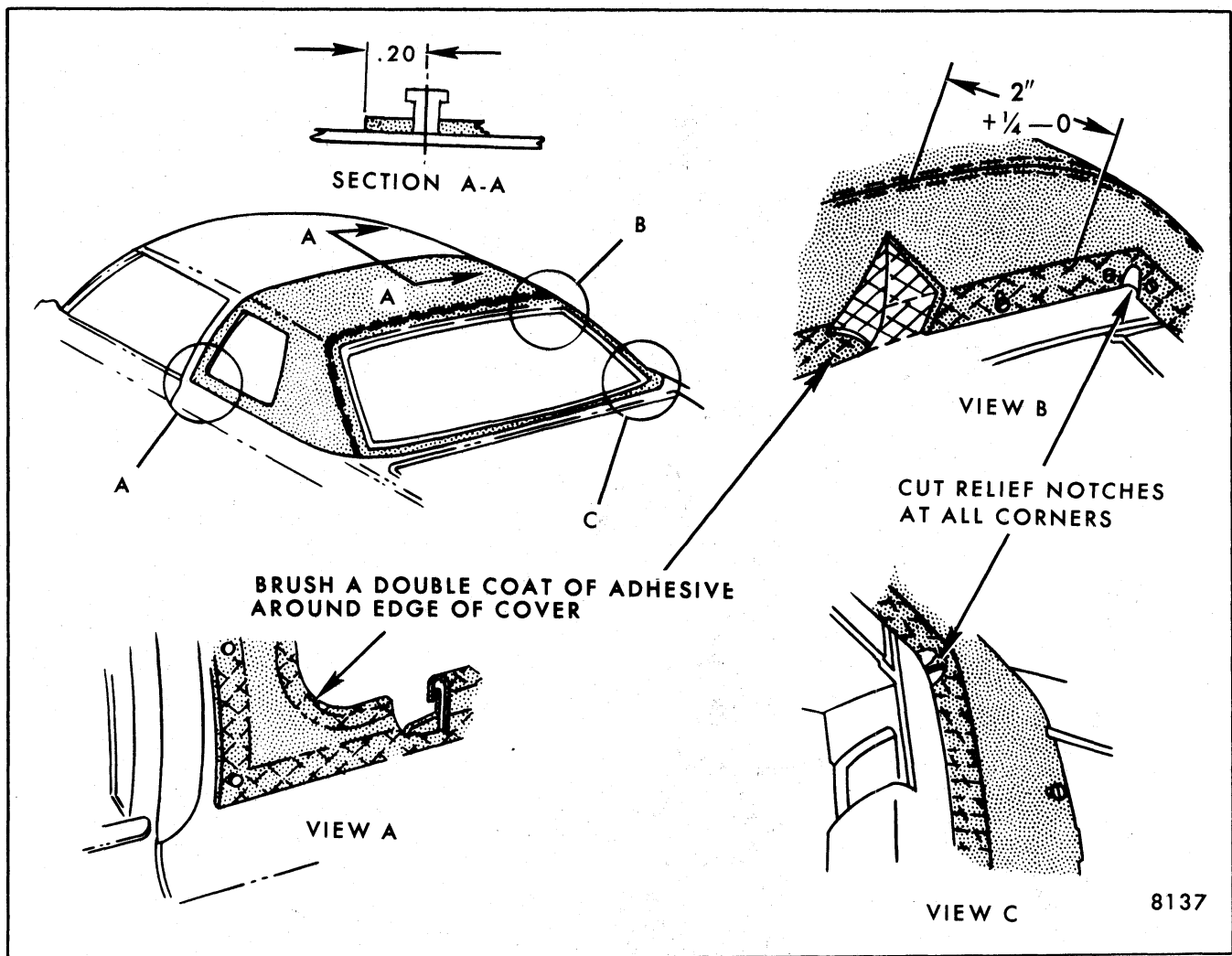


Fig. 8-40-Landau Fabric Roof Cover Installation (CB4 Option)

1. Devilbiss Spray Gun Model MBC-510 or JGA-502 with one (1) quart pressure cup KB-519, air cap 24, fluid tip and fluid needle "E" (or equivalent).
2. Binks Spray Gun Model 62 one quart pressure cup 80-256 (or equivalent) or Spray Gun Model 18 one quart pressure cup 80-210 (or equivalent). Air cap 66 PG and fluid tip 66 (or equivalent) may be used with either gun. On Spray Gun Model 62 use fluid needle 365 and on Gun Model 18 use fluid needle 65 (or equivalent).

The recommended air pressures are as follows:

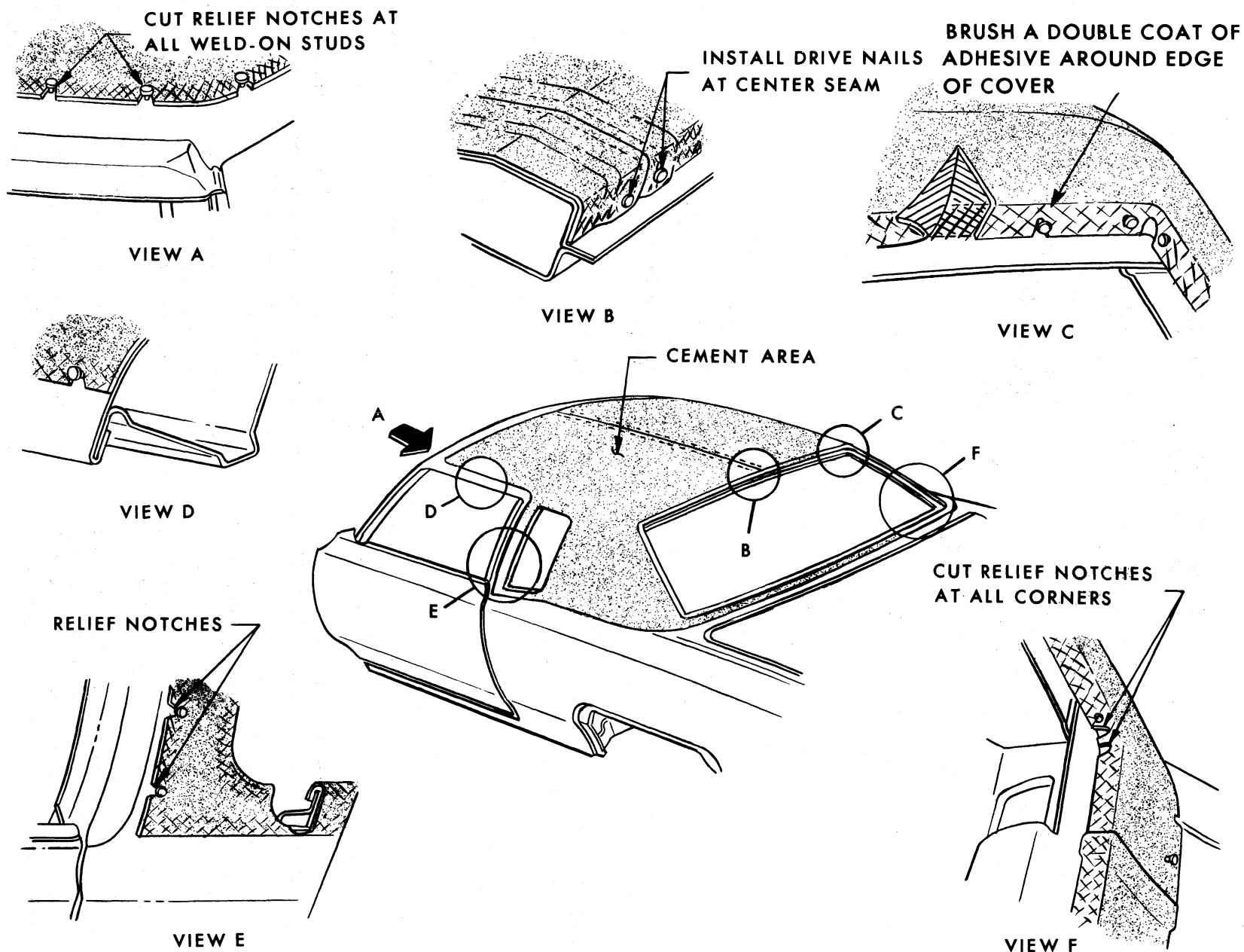
1. Air line pressure - 50 lbs.
2. Cup pressure - 2 to 4 lbs.

Previously mentioned vinyl trim adhesives

(or their equivalents) are of spraying consistency. If adhesive is applied with a roller, a mohair type roller should be used. Make certain adhesive is applied evenly and there are no highlights from excess adhesive build-up.

- d. Starting along center, gradually "slick" one side of the roof cover to the roof panel with the aid of a helper pulling and holding the cover away from the roof panel. Make certain cover is free of wrinkles.
- e. Repeat operation to remaining half of roof.
- f. On station wagon styles, brush a double coat of adhesive in "step-up" area (Fig. 8-37, View G) and complete installation to front and rear areas.
- g. Also on station wagon styles, cement cover

Fig. 8-41-Typical Fabric Roof Cover Installation with Halo Moldings (CB6 Option)



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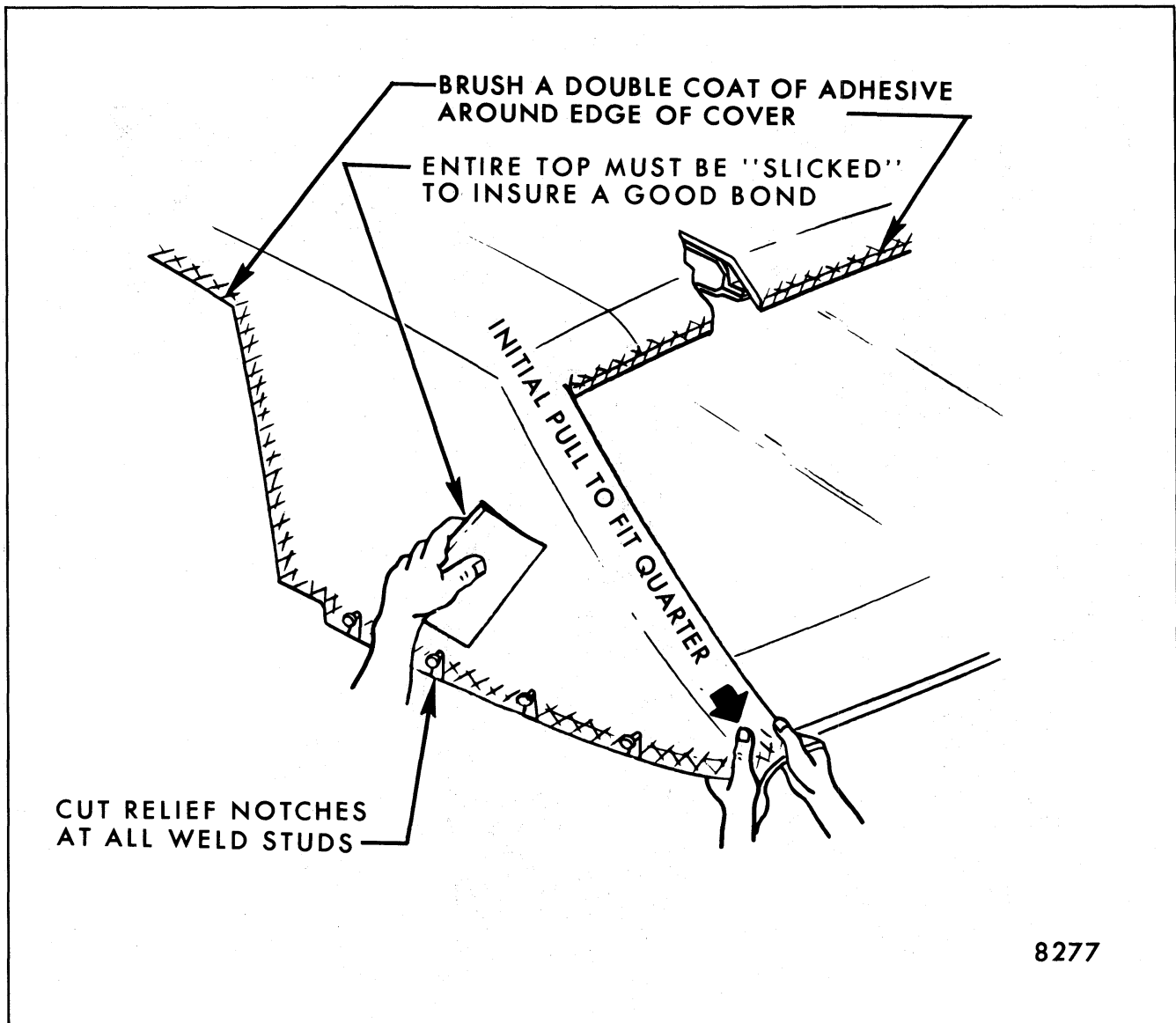


Fig. 8-42-Cementing Cover to Quarter Upper

down the rear body lock pillar into the door and quarter window openings (Fig. 8- 37).

- h. Apply adhesive to quarter upper areas and below back window opening on styles where cover extends below back window.
- i. On styles where cover extends below back window opening, cement cover as required.
8. On all styles cement cover to quarter upper area by pulling cover down and rearward. When operation is completed, cover should be free of all wrinkles and draws in this area (Fig. 8-42).
9. Cut relief notches in cover at all weld-on studs and angle cuts as required in corners of window openings (Fig. 8-30). Apply adhesive to window

openings and cement cover in openings. In the event a reveal molding clip cannot be removed, trim cover around clip and cement cover down behind clip.

NOTE: Make certain a continuous and positive bond exists when cementing cover in front and back window openings.

10. Brush a double coat of adhesive around edges of roof cover as indicated in Figure 8-30.
11. Protect the edge of glass when installing drive nails in window openings. Drive nails installed at seams should be located as low in window opening as possible. Use an awl or similar tool to initiate a hole where drive nail is to be installed.

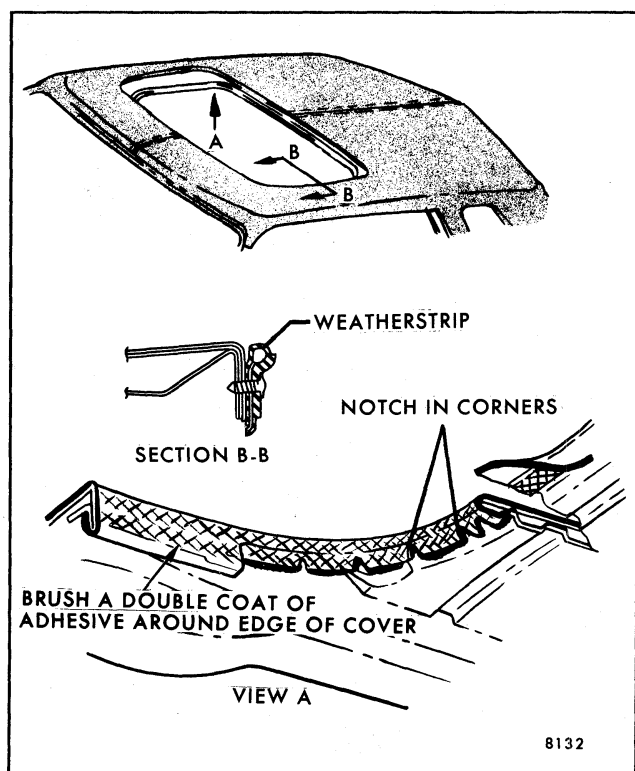


Fig. 8-43-Fabric Roof Cover Installation - Sun Roof Option
(CA1 or CO3)

12. On styles where roof panel cover extends down windshield pillar, cement roof cover to windshield pillar.
13. On styles equipped with roof panel moldings, trim cover in a line slightly outboard of weld-on studs on roof panel. **DO NOT DAMAGE PAINT FINISH.** At front corners, raise cemented edge of cover and using scissors or sharp knife cut radius so roof panel moldings cover cut edge. Recement cover to roof panel. Remove masking tape from roof panel (Fig. 8-41).
14. Trim cover slightly outboard of weld-on studs at quarter upper area and at rear end belt area. If it is necessary to trim material from outer edge of cover around windshield or back window opening, raise cemented edge and cut as required.
15. On sun roof (Fig. 8-43) or vista vent option, trim and cement cover in roof opening. Also, on sun roof option, replace previously removed tape along rear of opening.
16. Along side rail, perform the following:
 - a. On "A, B, C, E, and F" styles, cement cover around and to the underside of roof panel

flange and trim cover as shown in Figure 8-30, View "B".

- b. On "H and X" styles, cement cover around roof panel flange and trim as shown in Figure 8-35, View "D".

CAUTION: Make certain painted surfaces are not fractured during trimming of cover.

17. On styles outlined in steps 16a or b, install drip scalp moldings or weatherstrip retainer and finishing moldings. These moldings aid in retaining the roof cover.
18. Remove all previously installed protective covering from windshield, back glass and body.
19. Install all previously removed moldings and assemblies.

INTEGRAL PADDED FABRIC ROOF COVER WITH FOAM PAD - CO4, CB5 AND CA9 OPTION

Removal

1. Remove those items necessary to permit roof cover removal such as weatherstrip, scripts, emblems, etc.
2. Carefully cut silastic sealant between back glass and trim welt (Fig. 8-49, Section E-E) with a sharp instrument, such as a razor blade.
3. Completely mask off areas of roof panel which are not covered by roof cover. Mask upper windshield or reveal moldings, windshield glass, back window, all doors and flat painted surfaces (hood, rear compartment lid, etc.).
4. Apply heat to edge of roof cover and along cemented center area to aid loosening. Heat can be applied with a hot air gun (Fig. 8-60) held approximately one inch from the roof cover and rotated in a circular motion. Heat lamps can also be used if held a minimum of eighteen inches from the cover.
5. Loosen all cemented edges of roof cover, then carefully loosen and remove the roof cover from the foam pad.
6. If foam pad must be removed, work it off by inserting a putty knife or similar flat-bladed tool between the roof panel and foam pad.

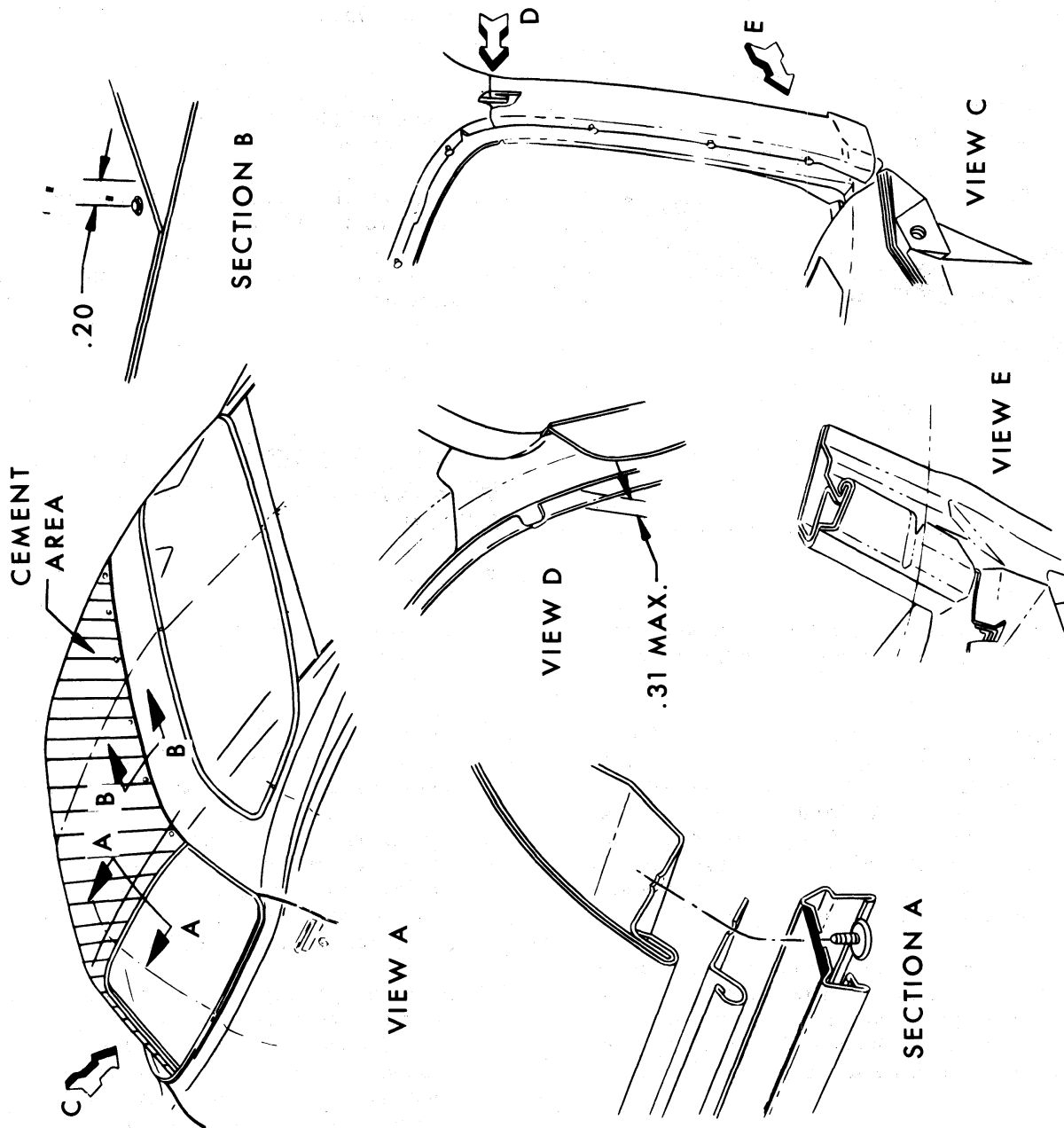


Fig. 8-44-Typical Fabric Roof Cover Installation - "F" Styles - CB7 Option

Installation - Three-Piece Foam Pad

1. Check roof panel for excessive pad material and adhesive. In the event any metal finishing is performed on roof panel, repair area must be painted.

NOTE: It is not necessary to remove all old pad material and adhesive. However, enough should be removed to prevent highlighting through the roof cover assembly.

2. Where possible, install new roof cover at room temperature (approximately 72 degrees) to permit easier fitting and removal of wrinkles from new cover assembly. Fabric roof cover pliers (Fig. 8-38) will aid in removing wrinkles.
3. Determine centerline of roof panel by marking center points on windshield and back window opening with tape or equivalent.
4. Align three-piece foam pad sections on roof to determine proper positioning and amount of overhang.
5. Remove valance strip below back window and one half of roof pad.
6. Brush an approximate 2" wide application of nitrile nonstaining adhesive, such as Huges HC-4183, 3M 8064 or equivalent, along inside edge of pad and to corresponding cementing surface on roof panel.
7. Make certain pad is properly aligned, then cement pad to roof while adhesive is tacky.

CAUTION: To correct a misaligned or wrinkled condition may result in damage to pad and cause considerable time to cut out old foam and patch in new.

8. Fold pad along cemented center area, apply adhesive to pad and to corresponding roof panel surface.
9. Starting along cemented edge and working toward drip moldings, cement pad to roof while adhesive is tacky. As pad is being unfolded and cemented, it should be thoroughly "slicked" down to avoid wrinkles and air bubbles.
10. Repeat operation to other half of roof making certain edges of pad butt together.
11. Apply adhesive to valance strip and corresponding surface below back window, butt one edge of valance against roof pad and "slick" valance in place.

NOTE: It is recommended that the vinyl trim adhesive be applied with a spray gun. As an alternate method, a brush or roller may be used. If spraying method is utilized, a spray gun along with the following equipment or equivalent should be used.

- a. Devilbiss Spray Gun Model MBC-510 or JGA-502 with one (1) quart pressure cup KB-519, air cap 24, fluid tip and fluid needle "E" (or equivalent).
- b. Binks Spray Gun Model 62 one quart pressure cup 80-256 (or equivalent) or Spray Gun Model 18 one quart pressure cup 80-210 (or equivalent). Air cap 66 PG and fluid tip 66 (or equivalent may be used with either gun. On Spray Gun Model 62 use fluid needle 365 and on Gun Model 18 use fluid needle 65 (or equivalent).

The recommended air pressures are as follows:

1. Air line pressure - 50 lbs.
2. Cup pressure - 2 to 4 lbs.

Previously mentioned vinyl trim adhesives (or their equivalents) are of spraying consistency. If adhesive is applied with a roller, a mohair type roller should be used. Make certain adhesive is applied evenly.

12. Trim excessive pad material (Fig. 8-45) as follows:
 - a. 1/2" inboard of weld-on studs at quarter belt and rear end beltline (Fig. 8-45). On CA9 option, trim pad to inboard of weld-on studs on roof.
 - b. In front and rear door opening flush with edge of roof, center pillar and quarter panel.
 - c. Flush with windshield opening at breakline.
 - d. Around back window flush with inner edge of reveal molding.
 - e. Cut away pad at quarter window opening, name plate and opera light on styles so equipped.

Installation - Two-Piece Foam Pad

1. To locate and mark the center of roof pad, fold

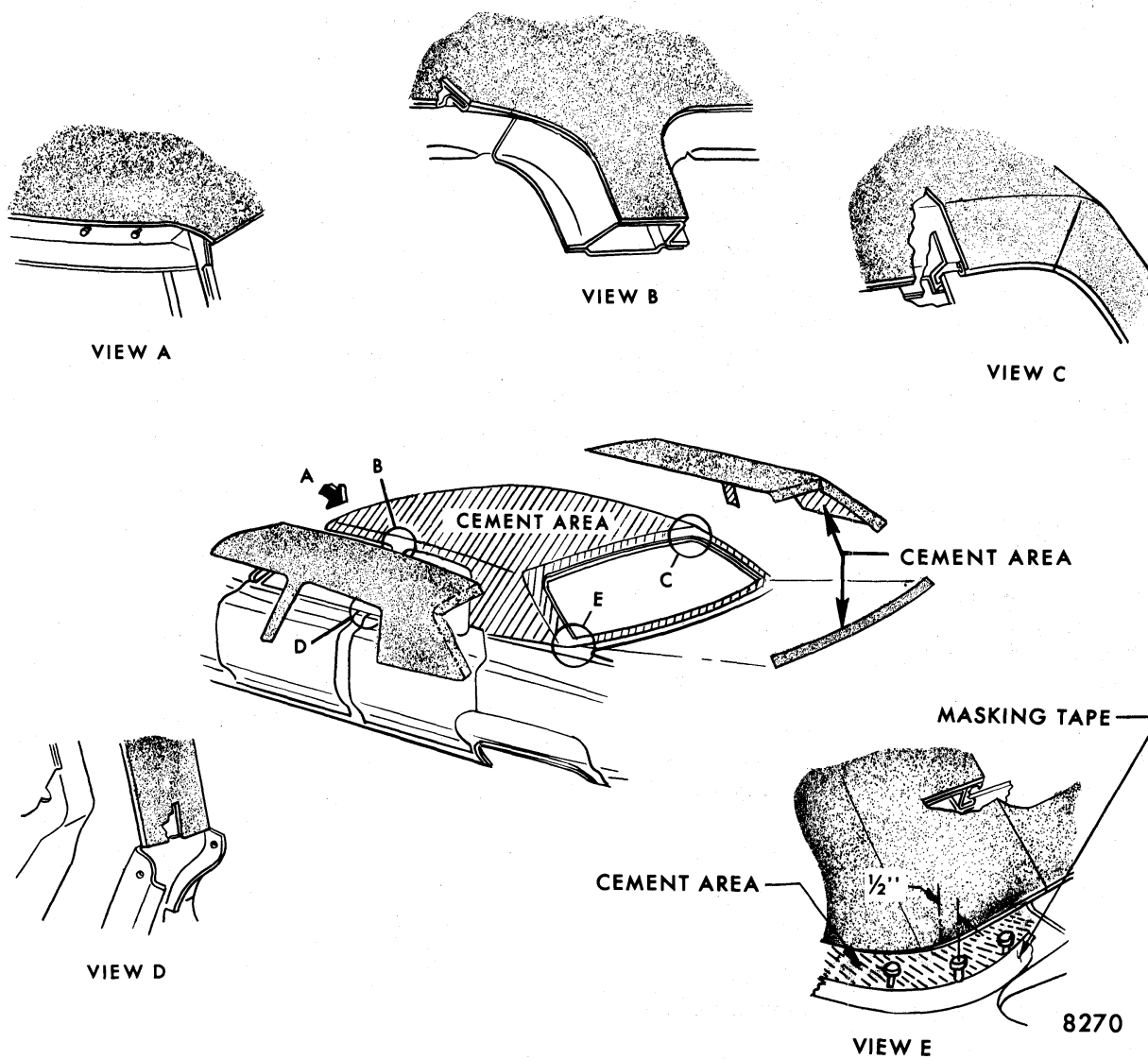


Fig. 8-45-Full Foam Pad Installation (Three Piece)

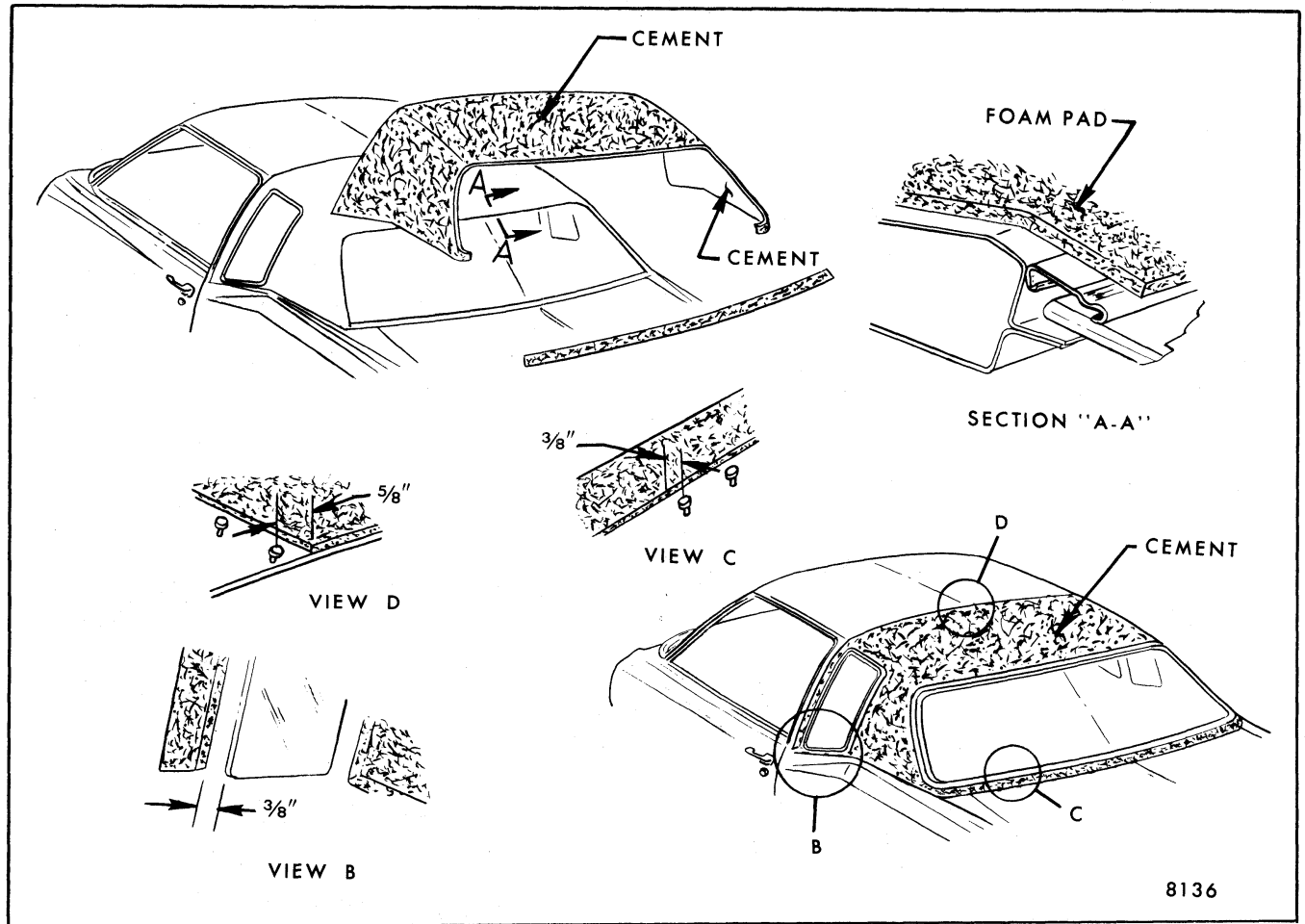


Fig. 8-46-Landau Foam Pad Installation (Two Piece)

lengthwise and mark center location at front and rear of pad.

2. Position pad on roof panel to align with roof centerline.
3. Fold pad lengthwise to expose approximately a 4" wide area along center of pad and corresponding surface on roof panel.
4. Brush an application of nitrile nonstaining adhesive, such as Hughes HC-4183, 3M 8064 or equivalent, along center of pad and to corresponding cementing surface.
5. Make certain pad is properly aligned, then cement pad to roof.

CAUTION: To correct a misaligned or wrinkled condition may result in damage to pad and cause considerable time to cut out old foam and patch in new.

6. Fold pad along cemented center area and apply

adhesive to pad and roof panel.

7. Starting along cemented center area and working toward drip moldings, cement pad to roof panel. As pad is being unfolded and cemented it should be thoroughly "slicked" down to avoid wrinkles and air bubbles.
8. Repeat operation to other half of roof.
9. Apply adhesive to valance strip and corresponding surface below back window, butt one edge of valance against roof pad and "slick" valance in place.
10. Trim excessive pad material (Fig. 8-46) as follows:
 - a. 5/8" inboard of weld studs on roof panel.
 - b. 3/8" inboard of weld studs below back window.
 - c. Cut away pad at quarter window opening.

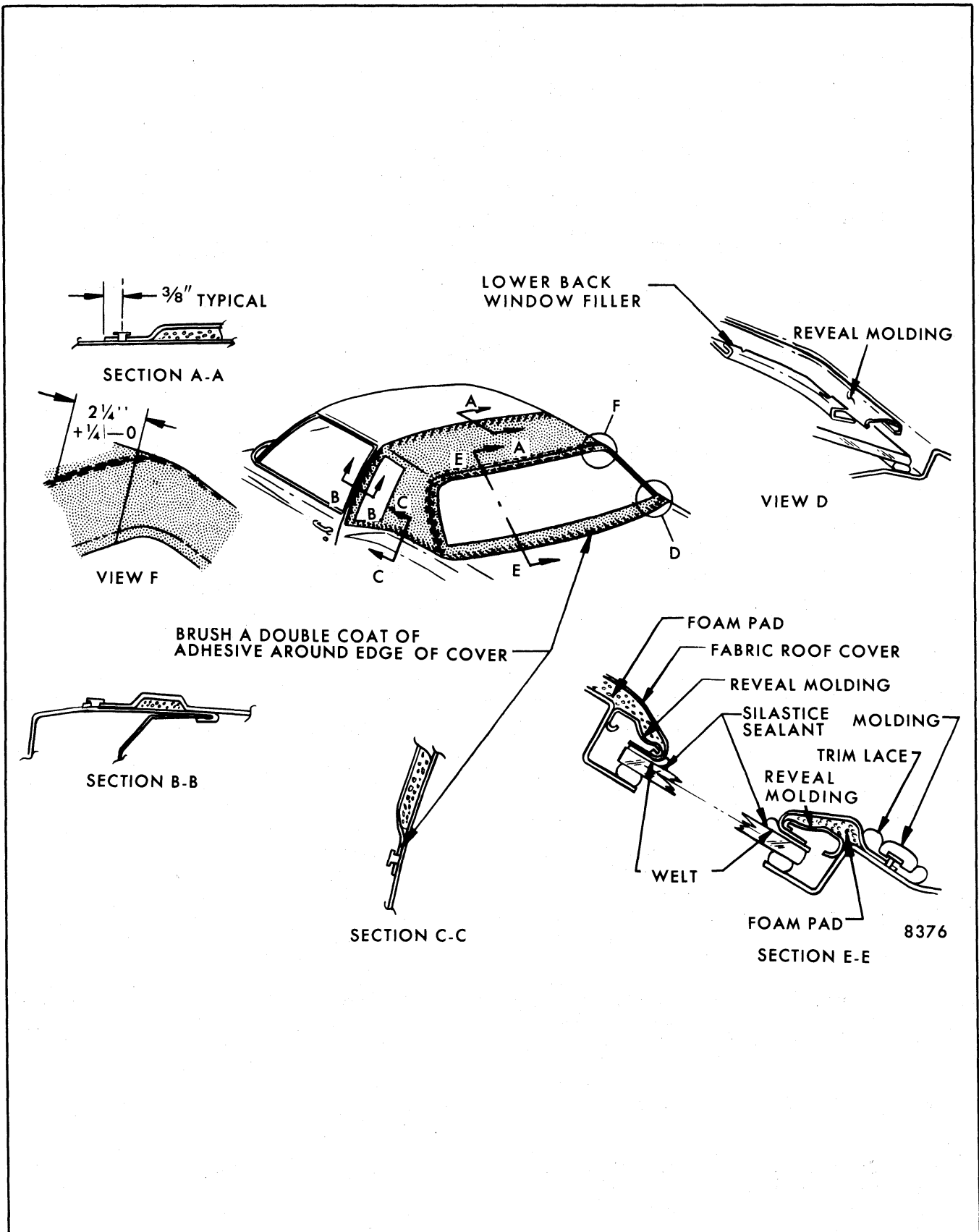


Fig. 8-47-Landau Fabric Roof Cover Installation with Foam Pad (C04 Option)

Installation - All Fabric Roof Covers Over Foam Pad (CO4, CA9 and CB5)

NOTE: The integral padded fabric roof cover cannot be pulled to the extent that a nonpadded roof can be pulled to compensate for a misaligned condition. Therefore, it is extremely important that before installing (cementing) the cover it be properly positioned on the roof, then reference marked for centering and fore and aft positioning.

1. Reference mark location of back window feature seam of roof cover on pad 2-1/4" plus 1/4 minus 0 outside of window opening on landau installation (CO4 Option) and 4" plus 1/4 minus 0 on full cover installation (CB5 Option).
 2. To locate and mark the center of a roof cover without a center seam (landau installation), position cover on roof panel and fold lengthwise at center location. Mark center at front and rear of cover.
 3. Align roof cover to previously determined reference marks.
- NOTE:** Use butt joint of two piece roof pad as reference when aligning cover.
4. Fold rear portion of cover forward to expose back window feature seam and corresponding reference on pad.
 5. Brush an even application of adhesive along horizontal portion of feature seam and to corresponding surface on pad. Do not include vertical side seams. Excessive adhesives will trap solvents under the cover and may cause blistering due to delamination of vinyl from fiber backing.
 6. Allow adhesive to become tacky and with the aid of a helper align and "slick" cover in place, eliminating all wrinkles.
 7. Expose vertical portion of feature seam, brush adhesive along cover seam and to reference on pad.
 8. Align cover seam to reference and "slick" cover in place, eliminating all wrinkles. Repeat operation on opposite side.
 9. Fold cover rearward, brush an application of adhesive approximately 6" wide adjacent to cemented horizontal feature seam.
 10. Starting at outboard corner and covering a small area at a time, pull cover taut and "slick" cover in place.

11. Fold cover rearward and apply adhesive to cover and roof panel. Do not include quarter upper or center pillar area. Allow adhesive to become tacky and "slick" cover to front of roof.

NOTE: Make certain cover is properly aligned and free of wrinkles. Fabric roof cover pliers or an equivalent tool may be used in aiding removal of wrinkles; however, do not pull too hard on material as padding could separate causing wrinkles and highlights.

12. Cut relief notches in cover at all weld-on studs and in all corners (front and back window openings and door openings). In the event a reveal molding clip cannot be removed, trim cover around clip.
13. Apply adhesive to roof cover in the following areas and to corresponding cementing surface.
 - a. Quarter upper
 - b. Center pillar ("69" styles only)
 - c. Brush a double coat of adhesive around edges of cover.
14. Cement cover to body in areas where adhesive was applied, making certain that the entire roof cover is free of wrinkles.
15. Trim excess roof material at quarter and rear end beltline using tape and weld studs as a cutting reference.
16. On styles equipped with roof panel moldings, trim fabric cover in a line slightly outboard of weld-on studs on roof panel.

CAUTION: Do not damage paint finish during trimming operation.

17. Trim cover at underside of roof panel flange (Fig. 8-49, View "B").
18. Trim cover in windshield and back window opening (Fig. 8-49, View "A" and Section E-E).
19. Wrap roof cover over foam pad in back window opening and with a putty knife or similar flat-bladed tool insert vinyl under reveal molding (Fig. 8-49, Section E-E). Roof cover must be free of wrinkles and puckers.
20. Install trim welt between roof cover and back glass.
21. Apply a continuous bead of silicone sealant such as Dow Corning Automotive, General Electric

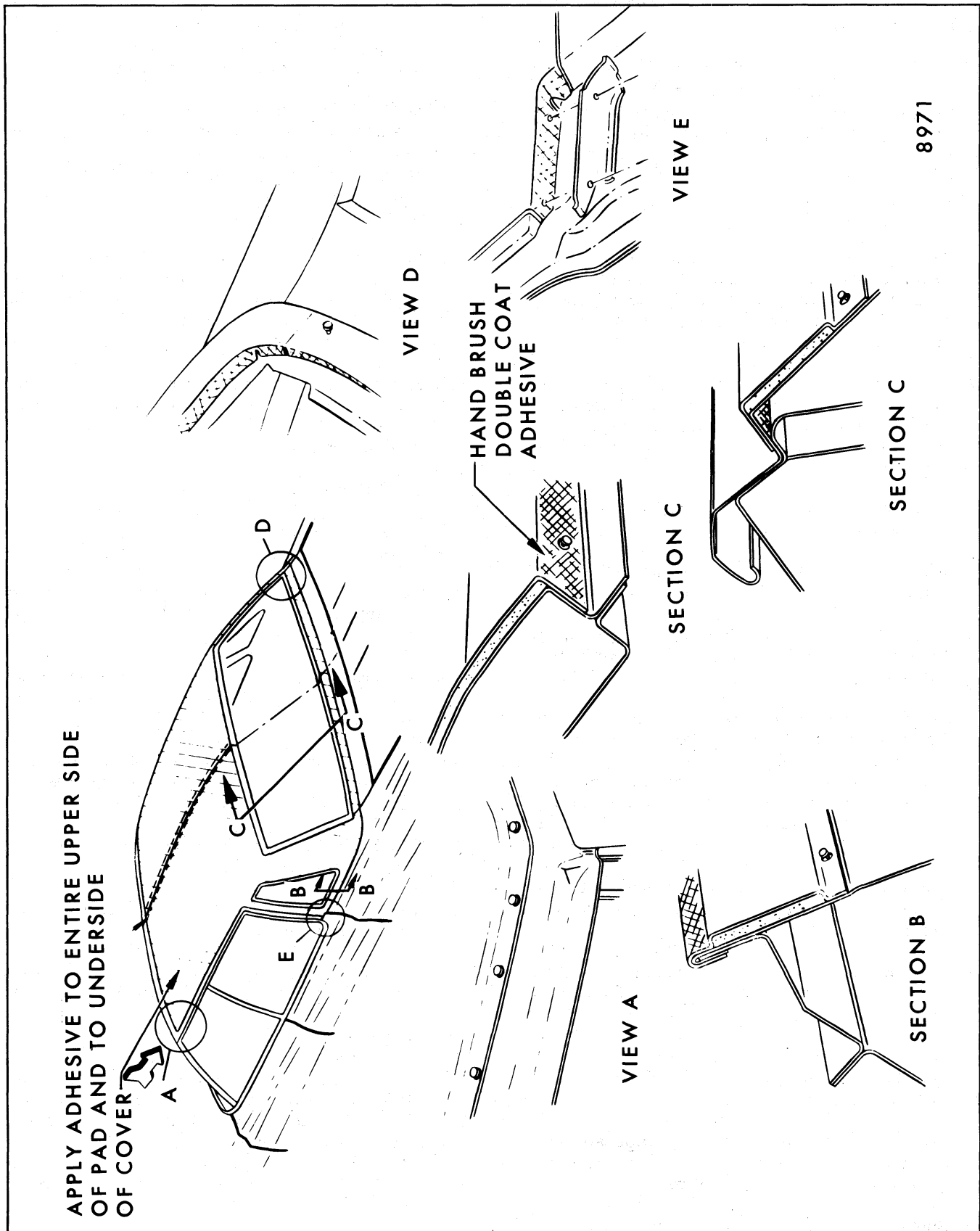
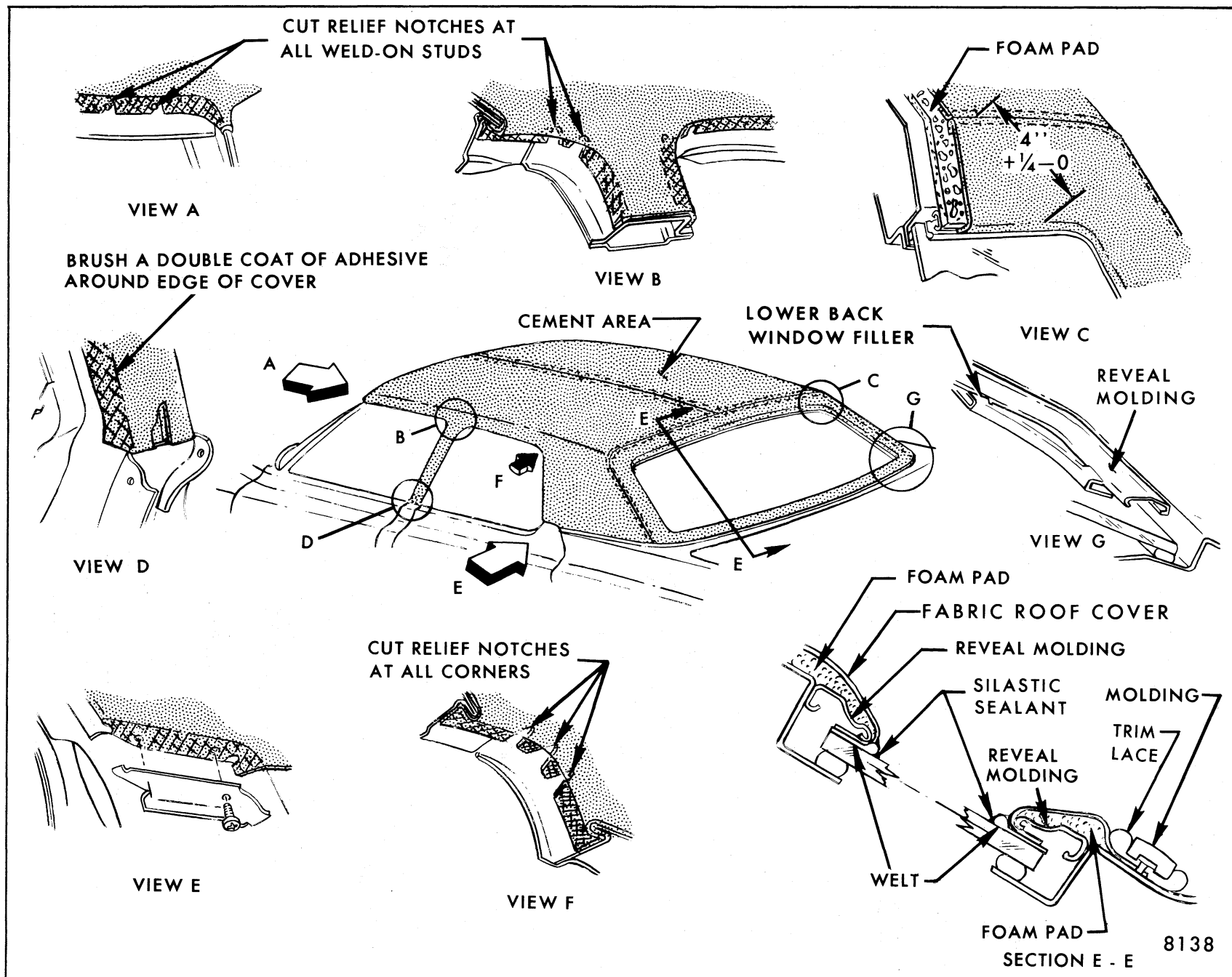


Fig. 8-48 - Fabric Roof Cover Installation - CA9 Option

Fig. 8-49-Fabric Roof Cover Installation - Cadillac "C-69", D'Elegance and Taisman (CB5 Option)



RVP Sealant or equivalent between back glass and trim welt (Fig. 8-49, Section E-E).

22. Remove all previously installed protective covering from windshield, back glass and body.
23. Install all previously removed moldings and assemblies.

FABRIC COVER - SUN ROOF SLIDING PANEL - CA1 and CO3 OPTION

Removal

1. Remove the following prior to removing fabric cover from sliding sun roof panel (see Fig. 8-50).
 - a. Sliding sun roof panel
 - b. Weatherstrip

c. Retainer

d. Water deflector

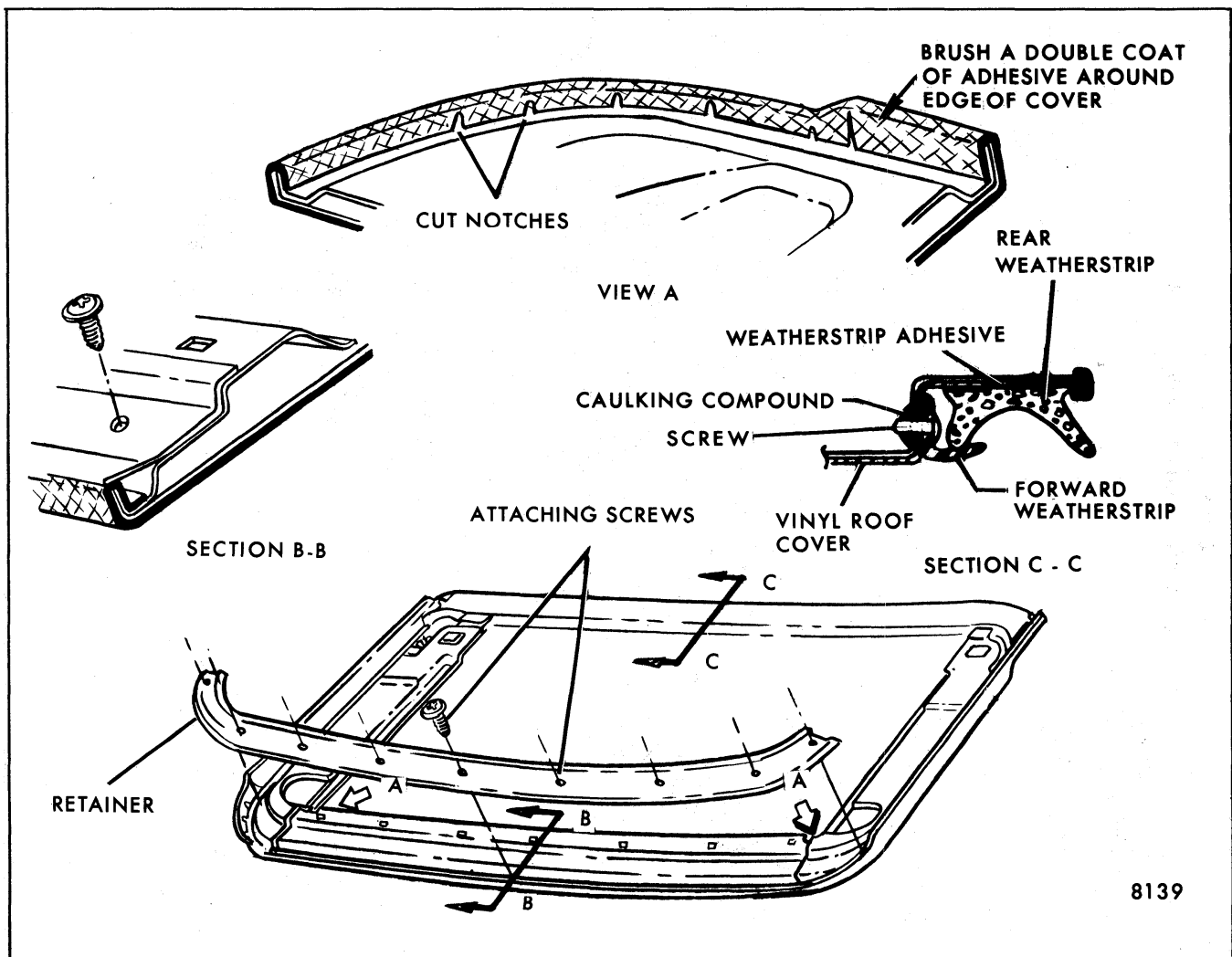
2. Prior to removing fabric cover, apply heat to edges of cover to aid loosening.

NOTE: Apply heat as previously outlined for fabric roof cover removal.

3. Loosen all cemented edges of cover, then carefully remove cover from remaining area of sliding panel.

Installation

1. Check all cementing areas on sliding panel to insure a smooth surface. Cementing surface must be smooth to prevent "highlighting" of excessive adhesive and/or padding material. In the event any metal finishing is performed on the



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Fig. 8-50-Fabric Roof Cover Installation on Sliding Sun Roof Panel (CA1 or CO3 Option)

sliding sun roof panel, repair area must be painted.

2. Hand-wire brush sliding panel to remove excessive adhesive and/or padding material.

NOTE: It is not necessary to clean off all old adhesive or padding, however, enough should be removed to prevent highlighting through fabric cover.

3. Install cover at room temperature (approximately 72 degrees, when possible). This will permit easier fitting and removal of wrinkles from new cover assembly.

NOTE: An integral padded fabric cover cannot be pulled to the extent that a nonpadded cover can be pulled. Therefore, it is extremely important that before installation the cover be properly positioned on the sliding panel, then reference marked for centering and fore and aft positioning.

4. Center cover on sliding panel.
5. Fold one half of cover back at center and apply adhesive to exposed half of sliding panel and cover. The type of adhesive and method of applying same is covered in "Fabric Roof Cover - Installation". Starting at center and working outward, cement cover to panel while adhesive is tacky. As cover is being unfolded, it should be thoroughly "slicked" down to avoid wrinkles and bubbles.
6. Repeat step 5 on opposite side of panel.

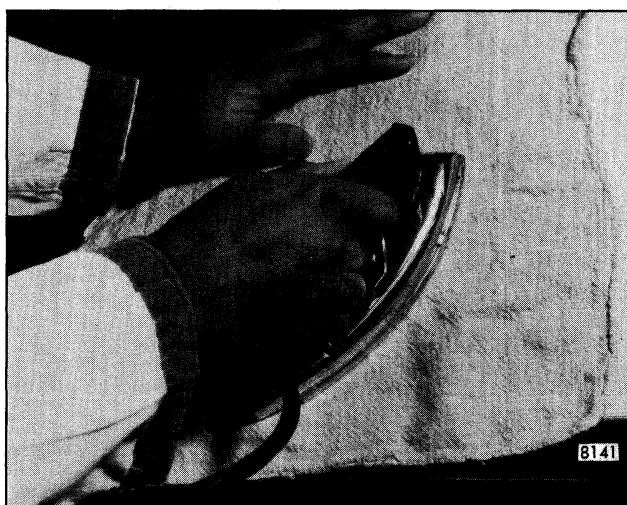


Fig. 8-51-Removing Wrinkles with a Dampened Cloth and Home Type Iron

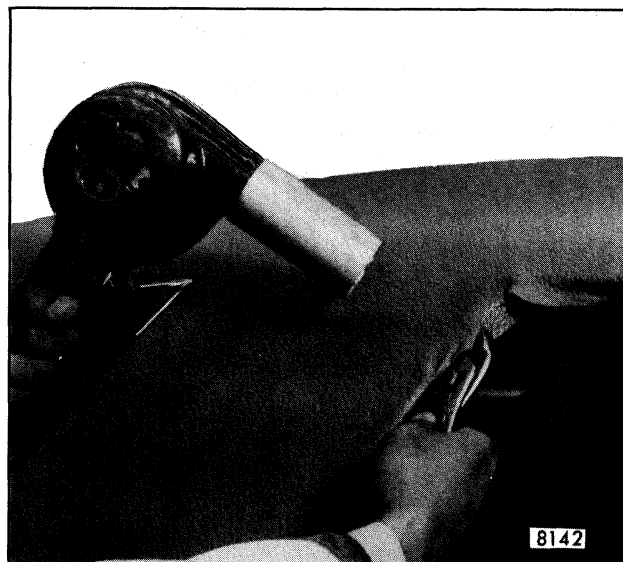


Fig. 8-52-Loosening Edge of Fabric Roof Cover

NOTE: Fabric roof cover pliers or an equivalent tool may be used in aiding removal of wrinkles.

7. Notch cover at corners.
8. Brush a double coat of adhesive to inside of flange area and "slick" cover in place.
9. Trim excessive material as required.
10. Install forward weatherstrip.
11. Apply adhesive to rear weatherstrip and contacting surface at rear of panel, then install weatherstrip, retainer and water deflector (Fig. 8-50).
12. Install sliding sun roof panel in roof opening.

REMOVING WRINKLES FROM FABRIC ROOF COVER - ALL OPTIONS

Fabric roof cover wrinkles that do not recover of their own accord after a relatively short exposure to sunlight (several days) can be corrected as described in the following procedure.

As most wrinkles can be ironed out using a household type iron, it is recommended that this method be used first. If ironing does not correct the condition, it will be necessary to loosen the fabric cover from the roof panel to pull out the wrinkles.

1. Apply a clean dampened shop cloth over wrinkled area.

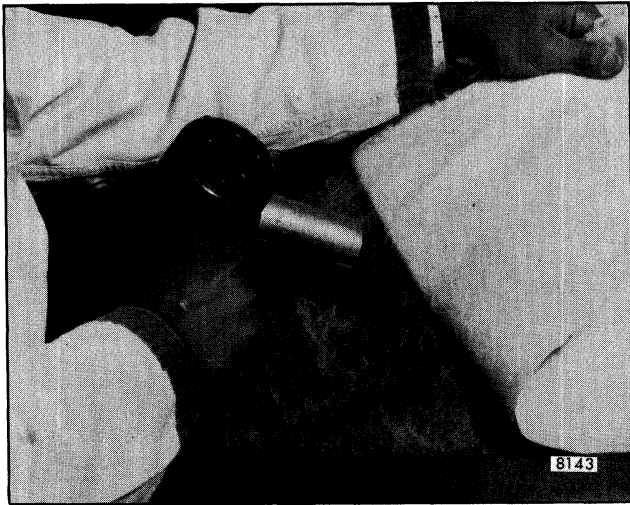


Fig. 8-53-Separating Wrinkled Area from Roof Panel - Heat Application

2. Using a household type flat iron with heat control set for medium heat (cotton or lower), iron wrinkled area (Fig. 8-51).

CAUTION: *Keep iron in motion. Do not allow cloth to become dry as excessive heat will damage the vinyl material.*

3. Continue ironing operation until wrinkles are removed or it becomes apparent that ironing alone will not correct the condition.

If wrinkles remain, proceed with next step.

4. Remove moldings adjacent to wrinkled area.
5. Apply heat to edges of cover to aid loosening. Heat can be applied with a hot air gun held



Fig. 8-54-Separating Wrinkled Area from Roof Panel - Flat-Bladed Tool Application

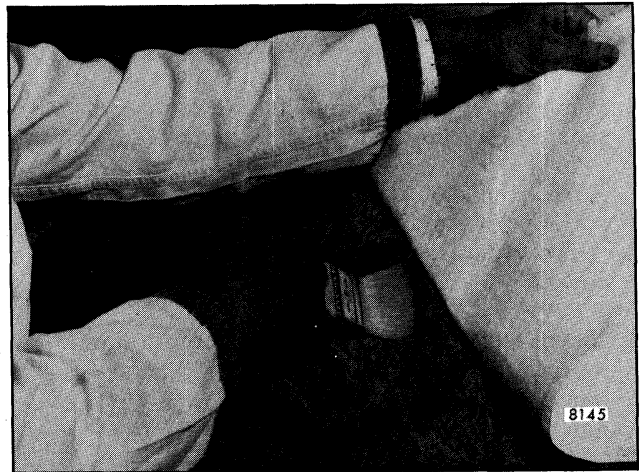


Fig. 8-55-Applying Adhesive to Roof Panel

approximately one inch from the cover and moved in a circular motion (Fig. 8-52). Heat lamps can also be used if held a minimum of eighteen inches from the cover.

CAUTION: *Excessive heat over 200 degrees may cause the roof cover to lose its grain, blister or become shiny.*

6. Using a pair of pliers carefully loosen edges of roof cover as shown in Figure 8-52.
7. Separate the wrinkled area from the roof panel by either applying heat with a hot air gun while simultaneously pulling on the roof cover (Fig. 8-53), or by carefully separating the integral pad from the roof panel with a flat-bladed tool such as a putty knife (Fig. 8-54).
8. Make certain bonding surfaces are free of sealer

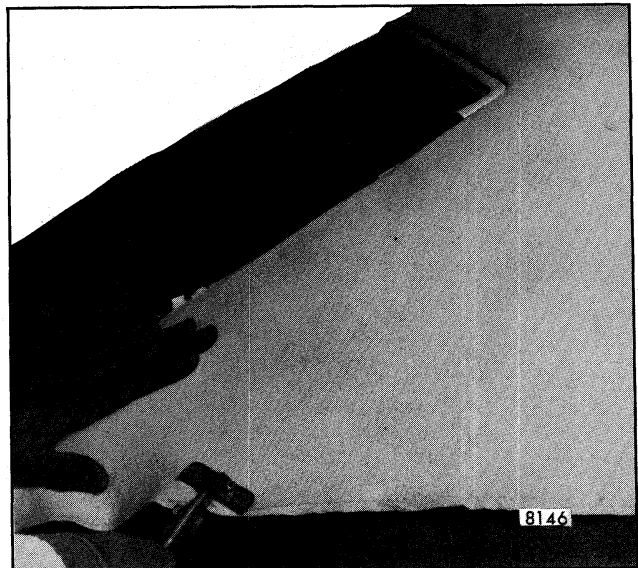


Fig. 8-56-Cementing Fabric Roof Cover to Roof Panel

and other foreign material around stationary glass and door openings prior to applying adhesive in step 9.

9. Brush an application of a nonstaining vinyl trim adhesive such as Hughes HC-4183, 3M Adhesive No. 8064; or equivalent to padded side of cover and to contacting metal surfaces (Fig. 8-55).

10. Allow adhesive to become tacky; then hand stretch and "slick" cover in place. Fabric roof cover pliers or an equivalent tool may be used in aiding removal of wrinkles as shown in Figure 8-56.

11. Replace moldings and clean soiled areas.

FABRIC ROOF COVER REPAIR

DESCRIPTION

The roof cover material is a vinyl coated fabric or an integral padded vinyl material which exhibits a grain pattern in the exterior vinyl surface. In the event the vinyl surface becomes damaged (cut, scuffed, gouged or torn), it is possible in most cases to make repairs without removing the cover assembly from the roof panel (see Figs. 8-57 and 8-58).

The repair procedures which follow describe two separate methods of repairing nonpadded fabric roof cover, two methods of repairing integral padded fabric roof cover and one method of repairing integral padded roof cover installed over 1/4" foam pad.

REPAIR PROCEDURE UTILIZING TEFLON COATED GRAINING TOOL

Equipment and Material Requirements

1. Repair tool kits for graining and curing vinyl

repair patching compound are available as follows:

Kit J-23091 (or equivalent) includes graining tool J-23091-1 (or equivalent), heating iron and stand tool J-23091-2 (or equivalent) and variable heat control tool J-23091-3 (or equivalent) and is applicable for most 1976 and prior model year fabric roof cover materials which match the grain of tool J-23091 (or equivalent) (Fig. 8-59).

NOTE: Each component part of Kit J-23091 or equivalent is serviced individually.

2. Pallet knife - a small trowel used for applying vinyl repair patching compound (Fig. 8-61).
3. Razor or sharp knife - to be used for removing frayed edges from damaged area prior to application of vinyl patching compound (Fig. 8-61).
4. Vinyl cleaner (detergent type) - all purpose cleaner for removal of surface dirt, grease, dust, etc., from extremely dirty roof covers.

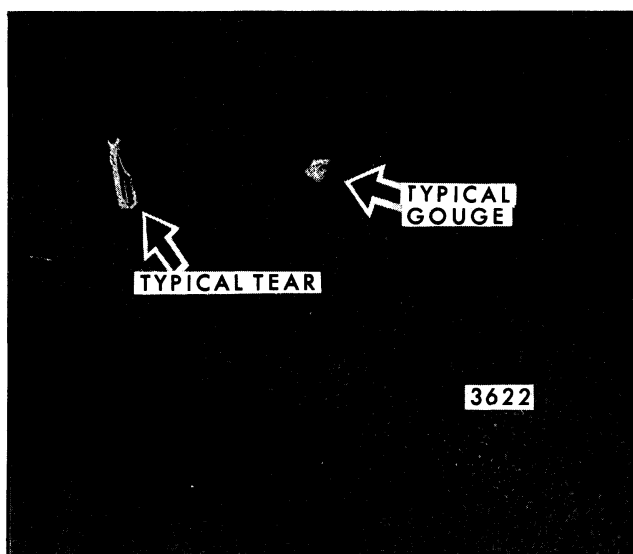


Fig. 8-57-Typical Fabric Roof Cover Discrepancy

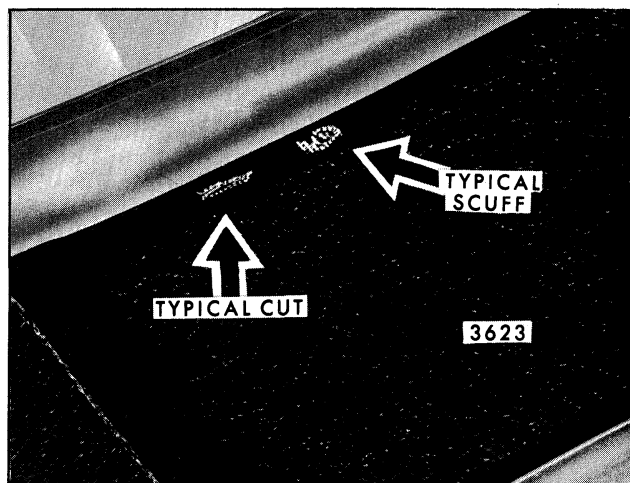


Fig. 8-58-Typical Fabric Roof Cover Discrepancy

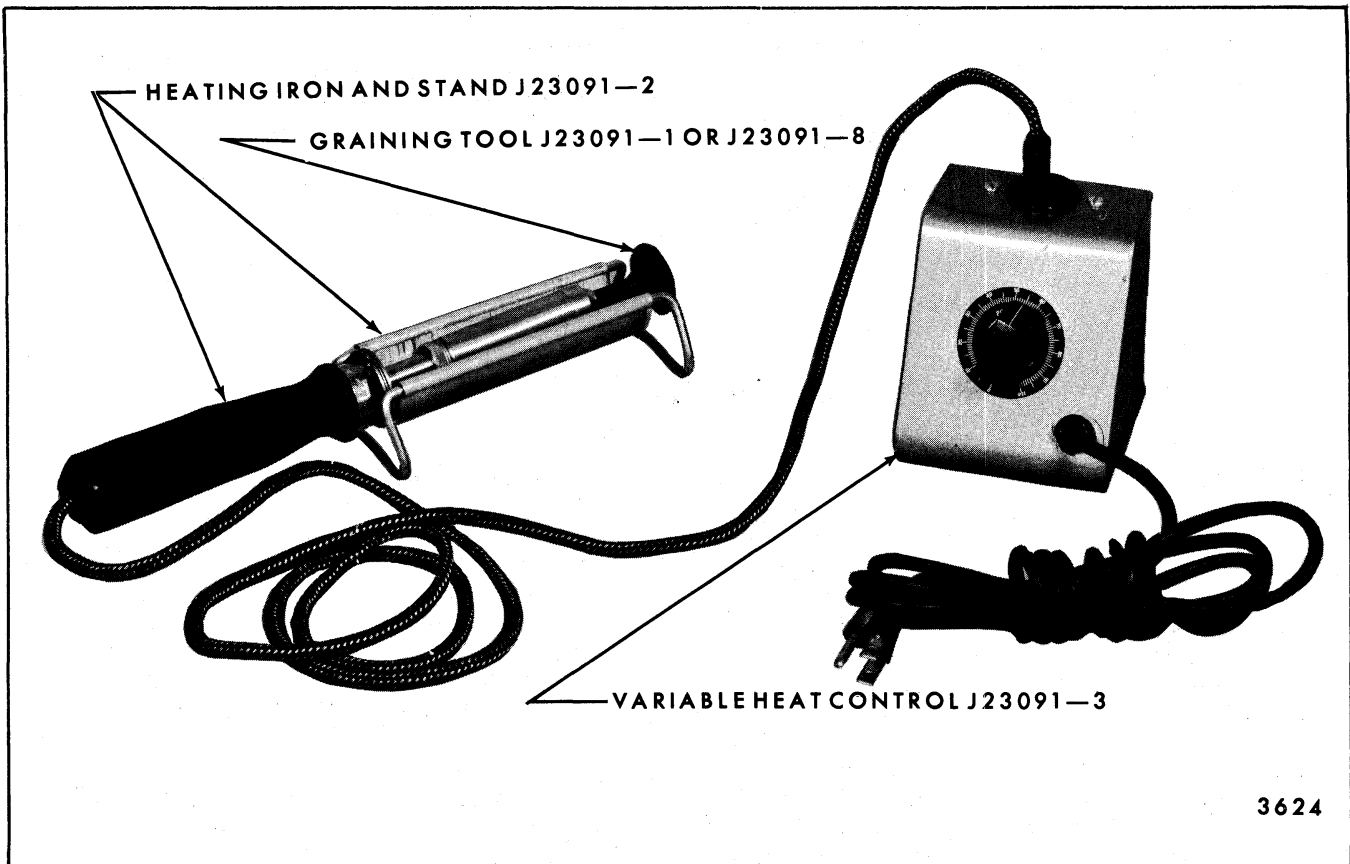


Fig. 8-59-Fabric Roof Cover Repair Tool

5. Vinyl cleaner (solvent type) - for removal of wax, silicone, oil, etc., from repair area prior to paint application (Fig. 8- 61).
6. Vinyl repair patching compound - a heat curing, milky colored, heavy bodied plastisol for repairing cut, torn, scuffed or gouged vinyl roof cover material (Fig. 8-61).
7. Vinyl repair paint - an approved, durable, waterproof, weather- resistant and pliable vinyl coating for refinishing vinyl coated fabrics.
8. Scissors - used for trimming loose fibers from damaged area.
9. Electric wood burning tool with screw-on tips (or equivalent)- used for smooth cuts, scuffs or gouges (Fig. 8-62).

2, on variable heat control (J-23091-3 or equivalent) for a minimum of 15 minutes or until the temperature has reached 300 degrees.

2. Prepare surface as follows:

- a. If cover has an over-all soilage, clean repair area with detergent type all purpose vinyl cleaner.
- b. Mask-off areas adjacent to repair area (body panels, moldings, glass, etc.).
- c. Using a razor knife, trim the damaged area to remove all frayed or damaged edges (Fig. 8-63).

NOTE: Trimming of vinyl and fabric backing at damaged area should be kept to a minimum. On cuts, scuffs or gouges with clean unfrayed edges, no trimming is necessary.

Repair Procedure

1. Preheat graining tool (if grain in tool matches grain in roof cover) at 60 setting, plus or minus

3. On damaged areas where no trimming was necessary, apply vinyl patching compound to edges of area as shown in Figure 8-64. Where trimming was required, apply compound to area

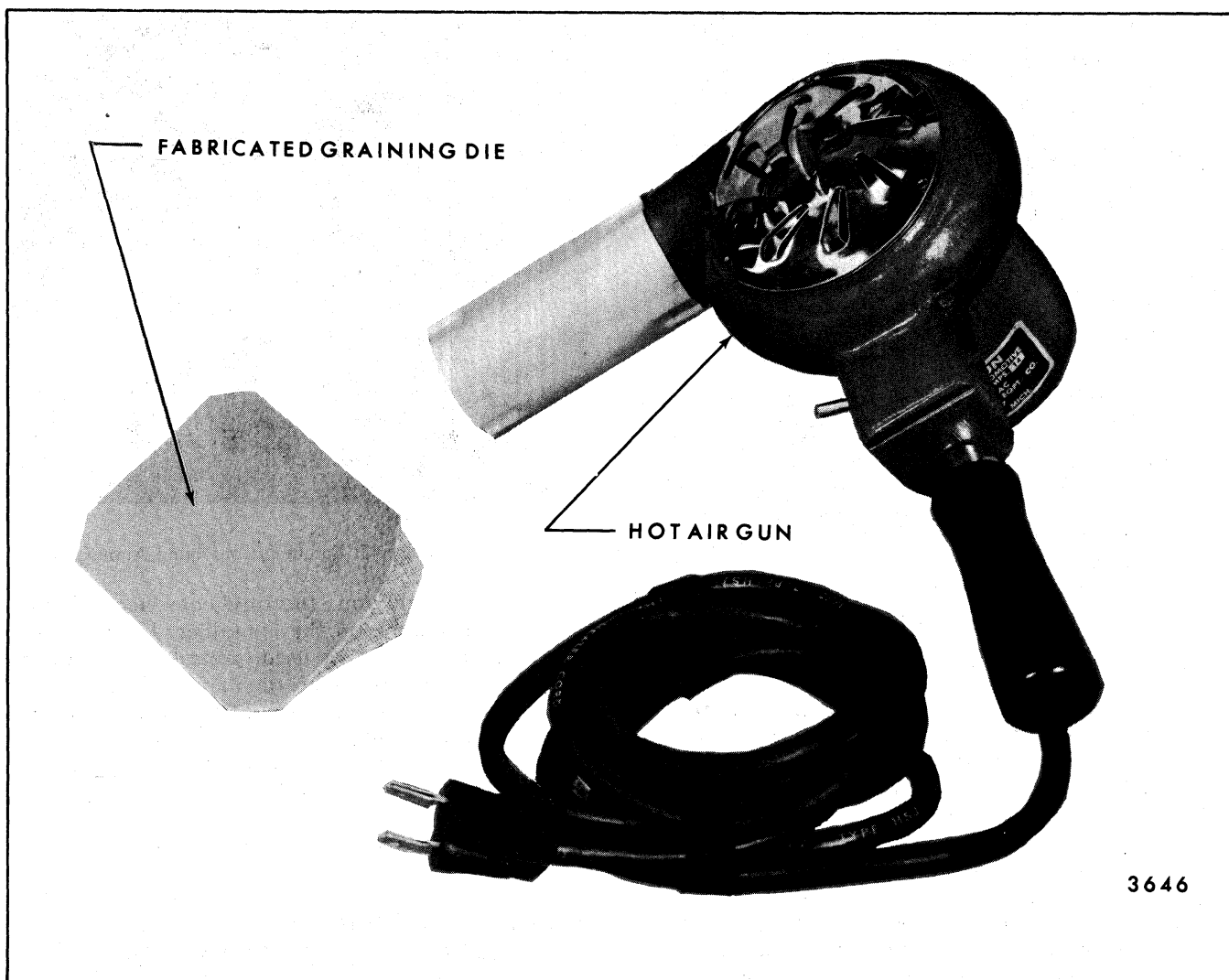


Fig. 8-60-Fabric Roof Cover Repair Die and Hot Air Gun

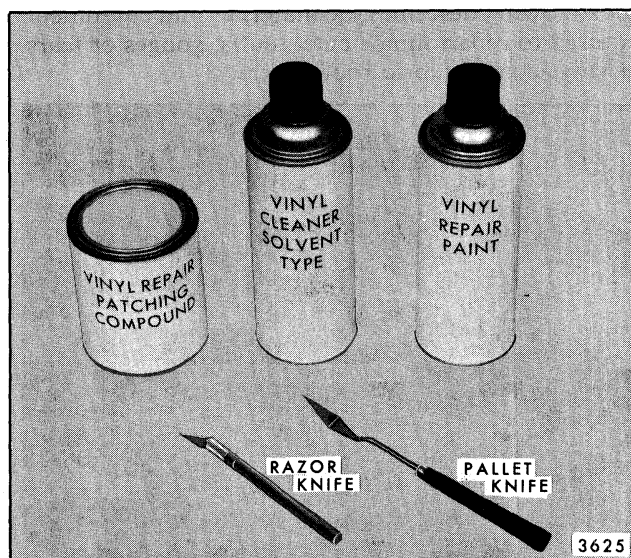


Fig. 8-61-Fabric Roof Cover Repair Materials and Tools

being repaired and trowel flush with adjacent surface as shown in Figure 8-65. Remove any excess material (compound) with clean cloth.

4. Graining operation is performed by exerting light hand pressure and applying preheated graining iron over damaged compound filled area for approximately one and one-half minutes (see Figs. 8-66 and 8-67). Curing and graining time can be increased slightly depending on size of repair.

NOTE: During graining operation, it is important that the iron be held in a stable, perpendicular position. The use of the tool must be compatible to the repair area surface (round edge in drip rail areas; tapered edge adjacent to reveal moldings; crown surface for flat areas). For large repairs, repeat curing and graining using an overlapping technique.

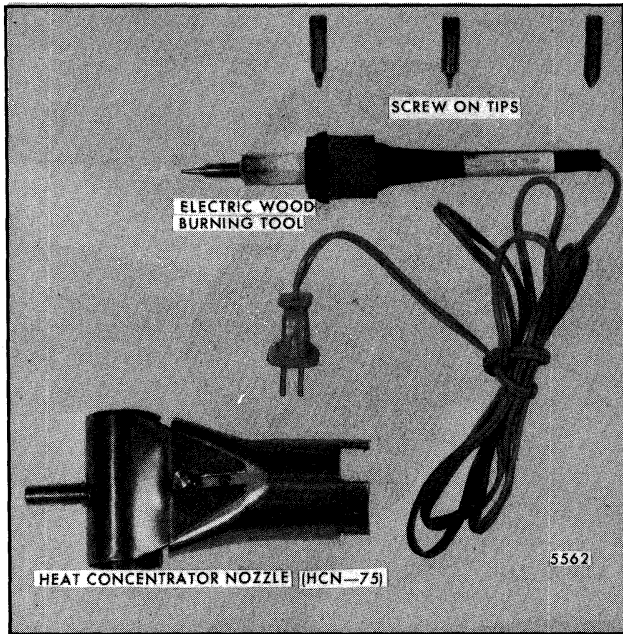


Fig. 8-62-Wood Burning Tool and Heat Concentrator Tool

After graining operation is completed, clean the graining tool with solvent type vinyl cleaner and apply a small amount of silicone to prevent adhesion of vinyl paint during future usage of tool.

5. Apply vinyl paint (solid colors) as follows:

- a. Using a soft lint-free cloth, wipe the repair area with solvent type vinyl cleaner to remove any wax, silicone, oil, etc., that may be present.

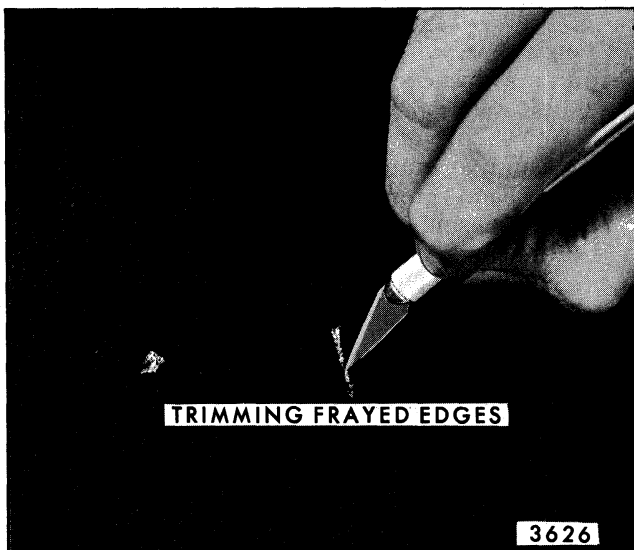


Fig. 8-63-Fabric Roof Cover Repair Trimming

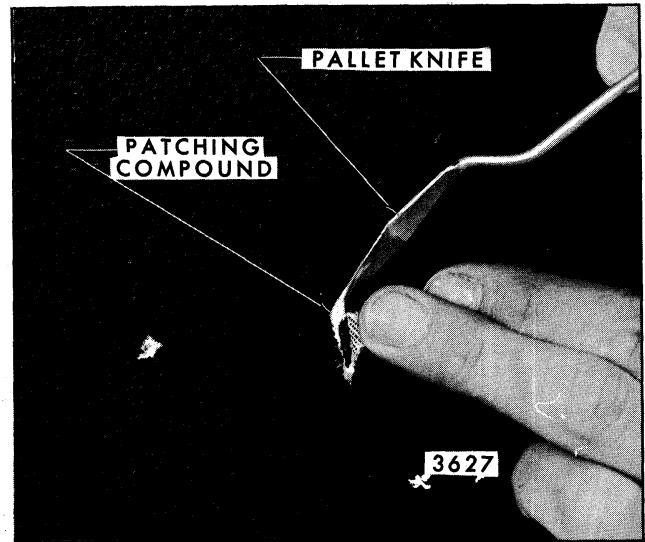


Fig. 8-64-Vinyl Repair Patching Compound Application

- b. Thoroughly mix the vinyl color according to instructions on the container. If an aerosol type container is used, pretest spray pattern on a piece of paper; then apply vinyl color to repair area with two or three light passes. Use a "fanning" motion to create a feathering condition around the perimeter of the spot repair.

NOTE: Avoid applying heavy coats of paint.

REPAIR PROCEDURE UTILIZING FABRICATED PLASTIC GRAINING DIE

Equipment and Material Requirements

The following describes the materials and equipment required to repair minor cuts, scuffs, gouges or tears on vinyl coated fabric roof covers:

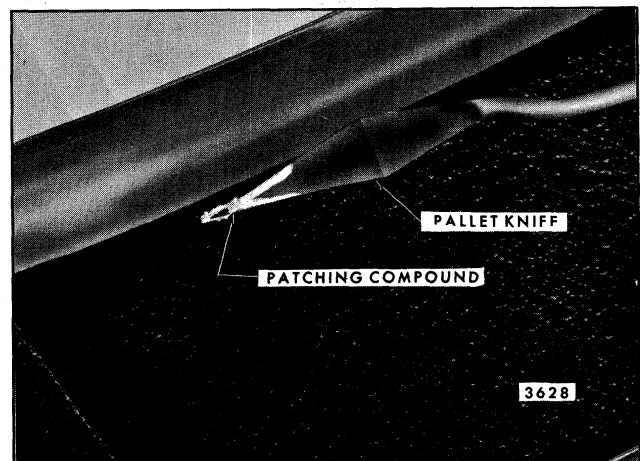


Fig. 8-65-Vinyl Repair Patching Compound Application

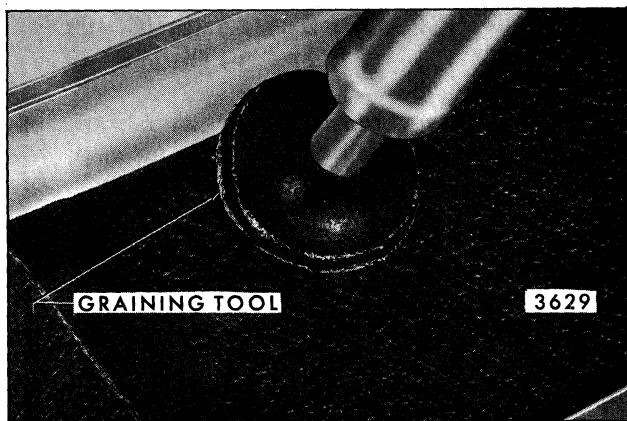


Fig. 8-66-Vinyl Patching Compound Curing and Graining

1. Plastic body filler and hardener - a two-part material for fabricating a graining die with an impression of the grain present in the vinyl surface of the fabric roof cover (see Fig. 8-60).
2. Liquid detergent cleaner - all purpose cleaner for removal of surface dirt, grease, dust, etc.
3. Vinyl cleaner (solvent type) - for removal of wax, silicone, oil, etc., from repair area (see Fig. 8-61).
4. Vinyl repair patching compound - a heat curing, milky colored, heavy-bodied plastisol for repairing damaged area (see Fig. 8- 61).
5. Vinyl repair paint - an approved, durable, waterproof, weather-resistant, pliable vinyl paint for final color refinishing (see Fig. 8-61).
6. Pallet knife - a small trowel for applying patching compound to repair area (see Fig. 8-61).

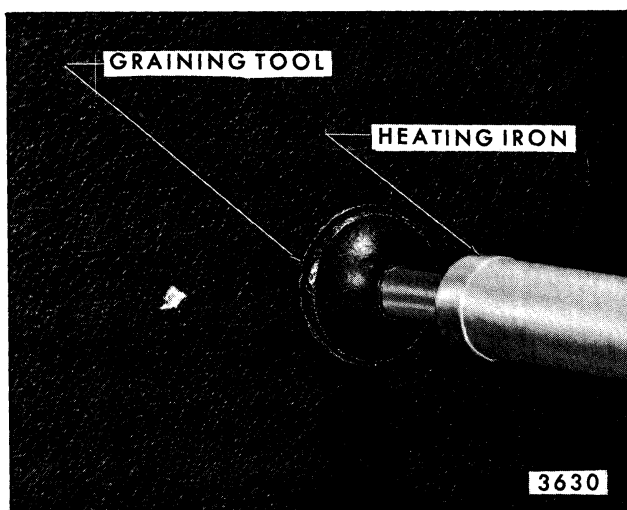


Fig. 8-67-Vinyl Patching Compound Curing and Graining

7. Hot air gun and heat control nozzle - used to cure vinyl patching compound, preferably 500 to 700 degrees heat range (Figs. 8-60 and 8-62).

Repair Procedure

1. To fabricate a graining die, select a scrap piece of roof cover material of the same grain design as area being repaired. Clean grain surface using a detergent type cleaner and allow the surface to dry completely while molding compound is being mixed.
2. Using a nonporous mixing surface, mix the plastic body filler as instructed on container label as follows:

NOTE: A porous mixing surface, such as cardboard, will absorb the hardening agent. This will cause improper curing of hardener.

- a. With a thin-bladed tool, spread the mold compound on previously prepared grain surface. Maintain a 1/8 inch thick application, approximately 2 inches wide and 6 inches long. Spread material from the center toward outer edges. Immediately after application of mold material, place a scrap piece of vinyl material, cloth side down over mold and apply light finger pressure. The mold will cure in 10 to 15 minutes. Heat may be applied to accelerate curing process.
- b. After curing, the entire mold can be removed from roof cover. Trim excess vinyl backing and any area that is unsatisfactory in grain pattern (outer edges of mold).
3. Prepare surface as follows:

- a. Using a soft lint-free cloth, wipe the repair area with solvent type vinyl cleaner. Allow area to dry completely.

CAUTION: *Protect adjacent painted surfaces.*

- b. Utilizing a razor knife, scalpel or other suitable tool, trim any frayed edges from damaged area. The damaged area should be trimmed to a minimum of 1/8 inch in width. This will permit easier filling process. A slight tapering angle of the repair surface walls provides greater surface for filler adhesion.
4. The vinyl patching compound is applied (using a pallet knife) in a succession of thin layers to the repair area. Cure material thoroughly after each

layer with hot air gun. Continue to apply patching compound until the top layer is flat to the surrounding surface level.

5. Thorough curing of patching compound is necessary for proper adhesion of each layer and can be accomplished with use of a heat gun. The filler is a milky substance which becomes almost transparent when properly cured. Heat should be directed to the repair area until the compound becomes transparent.

CAUTION: *Too much heat can result in loss of grain texture. To avoid overheating, attention should be given to the vinyl being exposed to heat. As heat is applied, the adjacent vinyl areas will begin to show a glossy appearance. When this occurs, the vinyl has reached working temperature. Further heating will result in loss of grain.*

6. Perform graining operation as follows:

- a. After the last layer of filler material has been cured, the graining operation is performed. This operation must be performed prior to cooling of filler material. Using hot air gun, apply heat directly on repair area. Continue heat application until vinyl begins to become glossy. At this temperature, successful graining can be achieved.
- b. After heat has been applied, press the graining die into the soft vinyl. If possible, graining should be accomplished on the first attempt. To minimize loss of pattern uniformity, apply steady, even pressure to the back of graining die to provide an even impression.

7. When graining has been completed, the repair area is ready for application of vinyl paint (solid colors) as follows:

- a. Using a soft lint-free cloth, wipe the repair area with solvent type vinyl cleaner to remove any wax, silicone, oil, etc., which may be present.
- b. Thoroughly mix the vinyl color according to instructions on the container. If an aerosol type container is used, pretest spray pattern on a piece of paper; then apply vinyl color to repair area with two or three light passes. Use a "fanning" motion to create a feathering condition around the perimeter of the spot repair.

NOTE: Avoid applying heavy coats of paint.

REPAIR - INTEGRAL PADDED FABRIC ROOF COVER (CB4, CB6, CB7 or C09 Option)

The procedures for repairing padded fabric roof cover on 1976 styles are basically the same as previously described for repairing nonpadded vinyl roof cover. However, due to different characteristics of the padded fabric roof cover, some changes are required to repair this type of roof cover.

As the padded roof cover is more difficult to repair, it is recommended that repairs be limited to cuts or tears no longer than one-half inch and other type of damage no larger than one quarter inch in diameter. In addition, damage area should be confined to edge of cover such as adjacent to roof drip and reveal moldings.

Patching Repair Procedure - Where Vinyl Material is Missing - Other than Cuts or Tears

1. Using a soft lint-free cloth, wipe the repair area with liquid detergent for removal of surface dirt, grease, etc., or a solvent type cleaner for removal of wax silicone, etc.

CAUTION: *Protect adjacent painted surfaces.*

2. Trim the repair area. Any padded back fibers that protrude through the damaged area can be worked back under the vinyl with a pallet knife. Any additional fibers can be trimmed with a razor, knife or scissors.

NOTE: Trimming should be held to a minimum.

3. Apply patching compound to damaged area with pallet knife.

NOTE: Alternately applying patching compound and curing is recommended; usually three applications are adequate.

4. Wipe off excessive patching compound around damaged area before curing.
5. Remove excessive amounts of compound from damaged area with the edge of a pallet knife while compound is hot. This will aid in keeping repair area level.
6. Apply heat to damaged area using a hot air gun with heat control nozzle attached (Fig. 8-62).
7. Hold hot air gun approximately one inch from

the damaged area rotating gun in a circular direction. Curing takes place in about twenty seconds or when the patching compound turns from white to grey.

CAUTION: *To avoid overheating, attention should be given to the vinyl roof cover adjacent to repair area. As heat is being applied, the adjacent vinyl will display a glossy appearance. When this occurs, vinyl has reached working temperature and further heat will result in loss of grain.*

8. After heat has been applied, press the graining die into the soft compound filled damaged area. If possible, graining should be done on the first attempt. A steady even pressure on the back of the graining die minimizes the loss of grain.

NOTE: On Cadillac styles with a linear grain the graining die lines should match the direction on those in the vinyl roof cover.

9. If necessary, graining may be improved by carefully going over the damaged area with an electric wood burning tool matching the existing grain.

Variable heat control tool J-23091-3 (or equivalent) may be used to control heat of electric wood burning tool. Set heat control unit at 75 on the dial indicator (approximately 375 degrees).

Test this setting on a piece of scrap vinyl. Adjust heat control unit as required. The electric wood burning tool tip should be kept clean and lubricated with a small amount of silicone.

NOTE: If repair is too high, sand down high spots with 200 grit open coat paper, then regrain and respray, or cut out undesirable area and repeat repair procedure.

10. When graining has been completed, the repair area is ready for application of vinyl paint (solid colors) as follows:
 - a. Using a soft lint-free cloth, wipe the repair area with a solvent type vinyl cleaner to remove any wax, silicone, oil, etc., which may be present.
 - b. Thoroughly mix the vinyl color according to instructions on container. If an aerosol type container is used, pretest spray pattern on a piece of paper; then apply color to repair area with two or three light passes. Use a "fanning" motion to feather material around the perimeter of repair.

NOTE: Avoid applying heavy coats of paint.

Fusing Repair Procedure - For Cuts, Scuffs, Gouges

1. Clean area to be repaired as described in step 1 under "Patching Repair Procedure".

CAUTION: *Protect adjacent painted surfaces.*

2. Trim repair area. Any pad fibers that protrude above the damaged area can be worked back under the vinyl with a pallet knife. Any additional loose fibers should be trimmed off.

NOTE: Trimming should be kept to a minimum. A small amount of nitrile vinyl trim adhesive can be applied to the damaged area to hold it in place.

3. Fuse damaged area using an electric wood burning tool. In some cases, vinyl must be added to damaged area. Using wood burning tool, scrape vinyl material from a scrap piece of vinyl roof cover and fuse into the damaged area.
4. Restore grain to the damaged area by one of the following methods:
 - a. Using wood burning tool, grain the damaged area to the original grain in the cover.
 - b. Using a hot air gun with heat control nozzle attached, apply heat to the damaged area. Hold hot air gun approximately one inch from the damaged area, rotating gun in a circular direction.

CAUTION: *Overheating should be avoided as previously noted under "Patching Repair Procedure".*

- c. After heat has been applied, press the graining die into the soft vinyl. If possible, graining should be done on the first attempt. A steady even pressure on the back of the graining die will minimize the loss of grain.

NOTE: On Cadillac styles with a linear grain, the graining die lines should match the direction of those in the vinyl roof cover.

- d. If necessary, graining can be improved by carefully going over the damaged area with a wood burning tool, matching the existing grain (see step 9, "Patching Repair Procedure").
5. When graining has been completed, the repair

area is ready for painting as previously described in step 10 of "Patching Repair Procedure".

REPAIR - INTEGRAL PADDED FABRIC ROOF COVER WITH FOAM PAD C04 or CB5 Option

It is recommended that repairs be limited to cuts or tears no longer than one-half inch and other types of damage no larger than one-quarter inch in diameter. In addition, damage should be confined to edge of cover such as adjacent to roof drip and reveal moldings.

Repair Procedure

The repair procedure for repairing a vinyl roof cover with a foam pad is the same as specified for integral padded top material except the repair area must be backed up with a hard surface such as a metal panel.

1. Remove moldings.
2. Mask off area adjacent to damage.
3. Using pliers or similar tool, carefully loosen edge of roof cover up to roof break line (Fig. 8-68).
4. Pull cover up to expose edge of foam pad. Using a very sharp knife or razor blade, carefully cut cement bond between fabric roof cover and foam pad (Fig. 8-69).

CAUTION: Steps 3 and 4 should be performed with extreme care to prevent damage to roof cover. Tearing of foam pad during this operation may require considerable extra time to cut out old foam and



Fig. 8-69-Cutting Cement Bond Between Roof Cover and Foam Pad

patch in new foam to provide a smooth appearance along edge.

5. Apply heat sparingly between roof cover and pad to permit easier separation of cement bond (Fig. 8-70).
6. Tape back of damage using black waterproof tape.
7. Back up damage with a hard surface such as a metal plate, then make repair as previously described in "Integral Padded Roof Cover - Repair" procedure.
8. Brush an even application of a nonstaining adhesive, such as Hughes HC-4183, 3M 8064 or

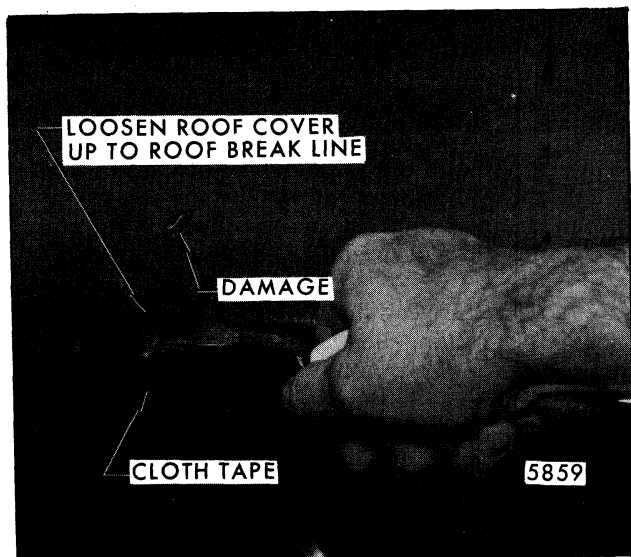


Fig. 8-68-Loosening Edge of Roof Cover

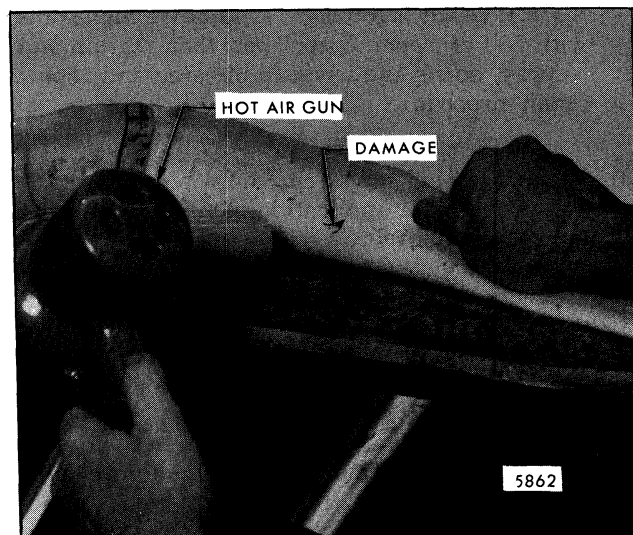


Fig. 8-70-Separating Roof Cover from Foam Pad - Heat Application

equivalent, to roof cover and foam pad. Allow adhesive to become tacky, then pull cover taut and cement cover in place. Excessive adhesive will trap solvents under the roof cover and may cause blistering due to delamination of vinyl from felt backing.

NOTE: Make certain cover is free of wrinkles. Do not pull too hard on material as wrinkles or highlighting could result. Vinyl roof cover pliers, or an equivalent tool, may be used in removing wrinkles.

SUN ROOF

DESCRIPTION

Two metal sliding sun roofs are available (painted or vinyl covered) as an option on "A-37 and 57" styles for Pontiac and Buick and "A-57" styles for Chevrolet. The sun roof feature permits opening of a sliding section of roof panel to admit sunshine and outside air into the passenger compartment (Fig. 8-71).

The sun roof is controlled by a two-position switch mounted in the windshield header safety pad area (Fig. 8-72).

During the opening cycle, the sun roof panel retracts down and rearward on guide rails into a storage space between the headlining and the roof. During the closing cycle, the sun roof moves forward and as it nears the end of forward travel, the rear portion initially moves upward on two ramps (Fig. 8-73); the lifter then places the panel flush with the roof surface and seals it within the roof opening. The sun roof may be left partially open in either direction of travel.

The sun roof can be closed manually in the event of electrical malfunction. To do this, remove the small round plug located in the center of the headlining near the front edge of the roof opening to gain access to the driving gear. Remove the plug by grasping with fingers and pulling downward (Fig. 8-72). Using the hex head auxiliary crank tool provided with the sun roof option, remove the screw which is visible when the plug is removed.

Insert the threaded end of the auxiliary crank tool into the crank tool slot in the drive gear (Fig. 8-74). Turn crank handle clockwise to close the sun roof. Remove the crank handle, install the hex head screw with lock washer and tighten the screw securely. Then replace the round plug.

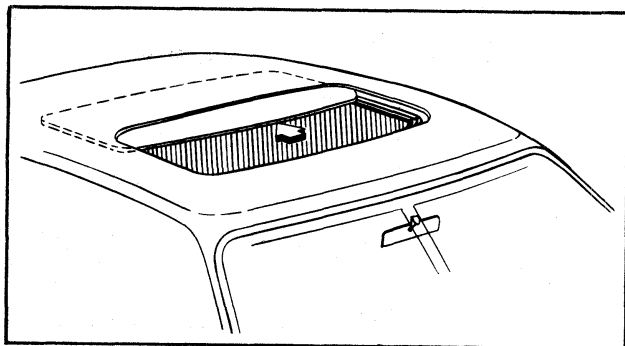


Fig. 8-71-Exterior View (Sun Roof Partially Open)

The sun roof is driven by a 12-volt reversible motor with an integral gear drive mechanism. The drive gear assembly is mounted near the center of the windshield header forward of the sun roof opening. The drive assembly drives two flexible gear cables that are attached to the sun roof sliding panel and control its movement.

For information on electrical circuitry, refer to "Power Operated Sun Roof" in the Electrical Section.

Four plastic drain hoses, one at each corner of the sun roof housing, are incorporated to catch water seepage that may bypass the weatherstrip seal around the roof opening. The two forward hoses (Fig. 8-79) are routed through the right and left windshield pillars, and out through grommets located at the bottom of the front body hinge pillar lower panels. The rear drain hoses are routed into the rear quarter panel forward of the rear wheel housings allowing water to drain through the rocker panel drain piercings.

DRAIN HOSES

During regular maintenance, check the two drain holes at the front corners of the sun roof housing to make certain they are open and free of foreign material. If drain holes or hoses are plugged, they can be cleaned with an air hose or flexible wire.

To clean rear drain hoses, use air pressure or flexible wire from the bottom of the tubes. The rear drain



Fig. 8-72-Control Switch and Drive Gear Access Plug

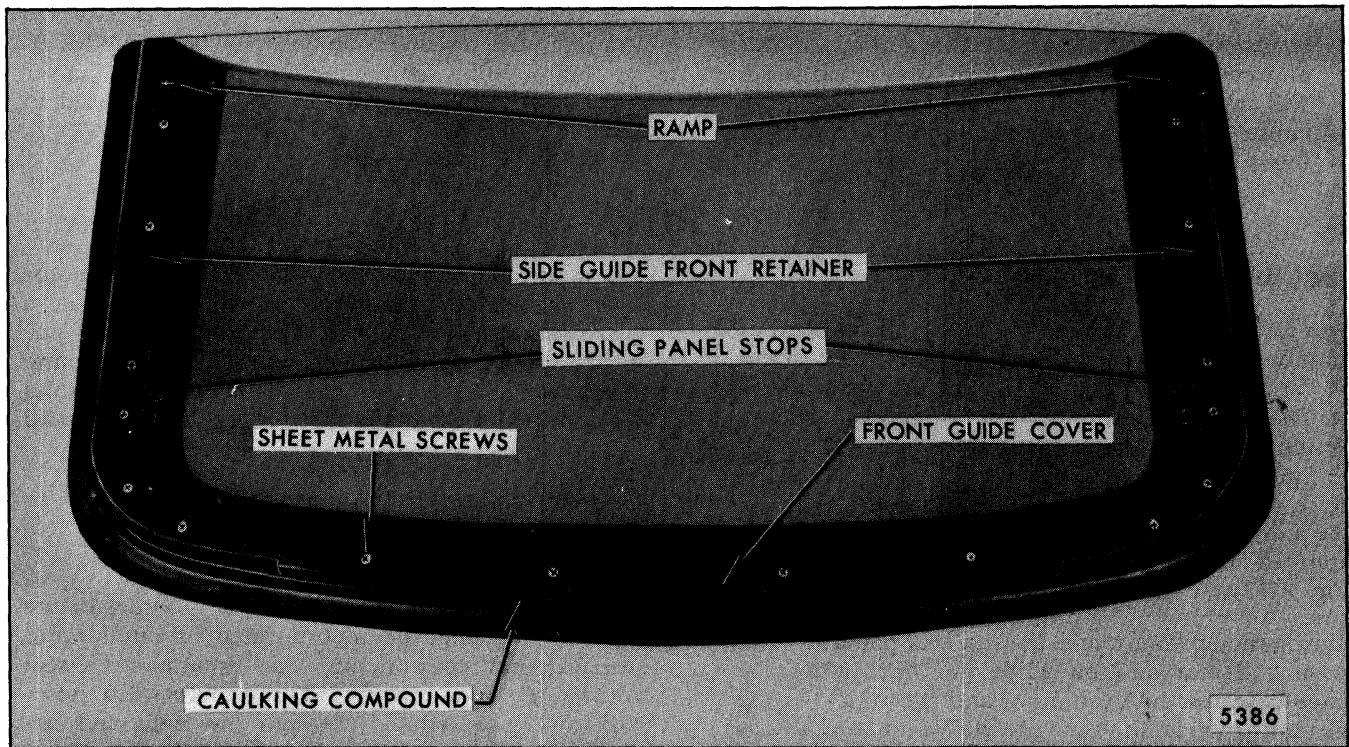


Fig. 8-73-Front and Side Guide Rail Covers

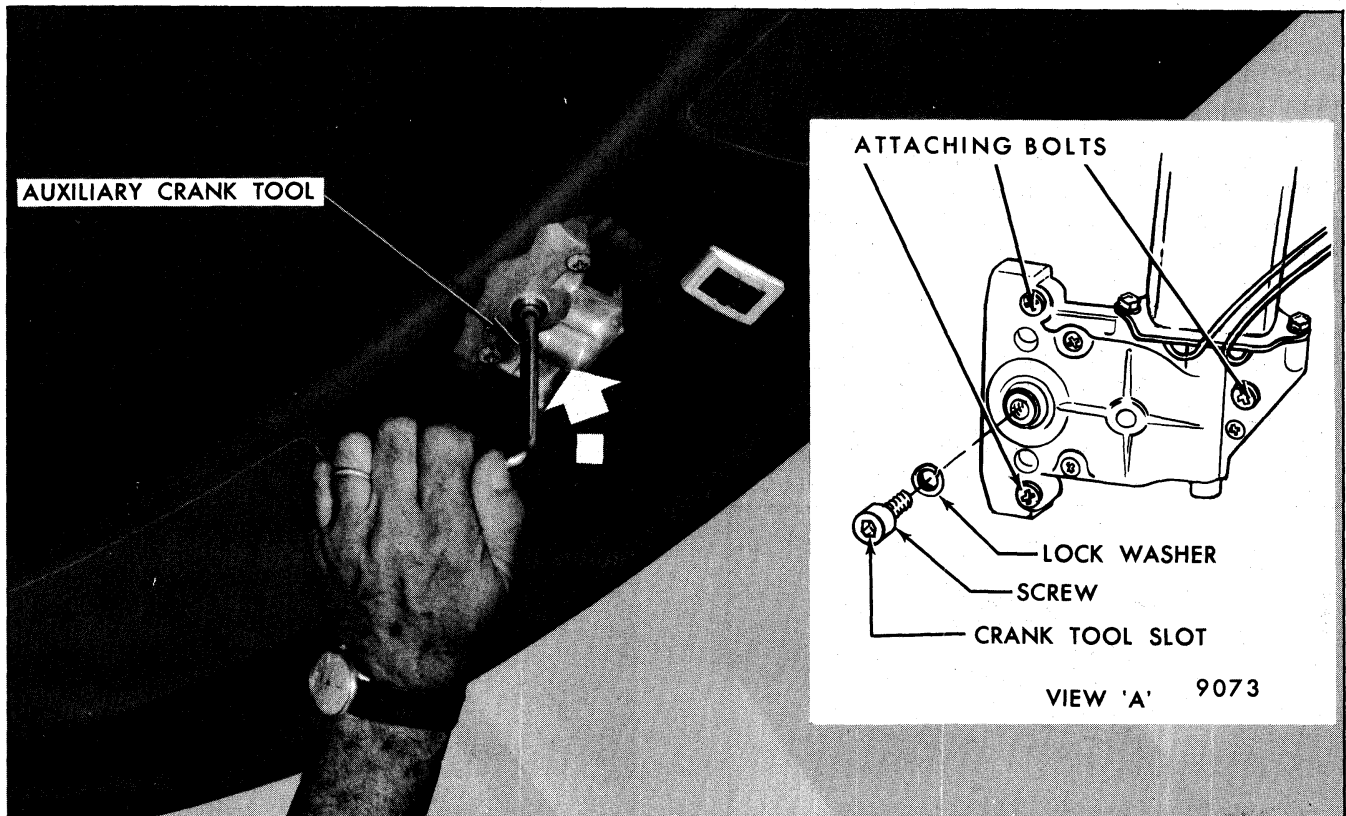


Fig. 8-74-Auxiliary Crank Tool Usage

SUN ROOF DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Sun roof panel fails to rise or close completely	1. Panel misaligned. 2. Cable guides misaligned. 3. Guide shoe jammed on guide. 4. Lifter link misaligned vertically or damaged beyond repair. 5. Damaged drive cable(s). 6. Side reinforcement cover damaged or missing. 7. Metal lifter tab bent and/or missing plastic cover.	A. Align panel. A. Align front cable guide to side guide rail (shim if necessary). A. Adjust guide shoe. A. Align lifter link vertically and adjust or - B. Replace both drive cable assemblies. A. Replace both drive cable assemblies. A. Replace side reinforcement cover. A. Straighten metal tab vertically to sliding panel and/or replace plastic cover.
2. Sun roof motor inoperative (ignition switch "on").	1. "Short" or "open" within sun roof circuitry.	A. Refer checking procedure in Electrical Section.

hose may be detached from its retaining clip through the rear compartment on "37" styles or by removing the quarter upper trim panel on "57" styles. Then pull the drain hose lower end through the quarter inner panel access hole ("57" styles) or rearward over the wheelhouse ("37" styles) for access to the lower end of the hose.

SUN ROOF ADJUSTMENTS

NOTE: For access to adjustment provisions, detach headlining panel and slide it rearward into the sun roof housing for stowage.

Vertical Adjustment at the Front of the Panel

1. To obtain a flush fit with the roof, remove clip

(Fig. 8- 76) and loosen two bolts on the front guide shoes (Fig. 8-75).

2. Turn front guide adjusting nut clockwise to lower roof panel and counterclockwise to lift panel (Fig. 8-75).
3. After proper alignment is obtained, tighten bolts to 14 to 22 inch-pounds of torque and replace clip.
4. Adjust opposite front guide in same manner if required.

Vertical Adjustment at the Rear of the Panel

1. To obtain a flush fit with the roof, loosen attaching nut on lifter link (View "A", Fig. 8 '5).

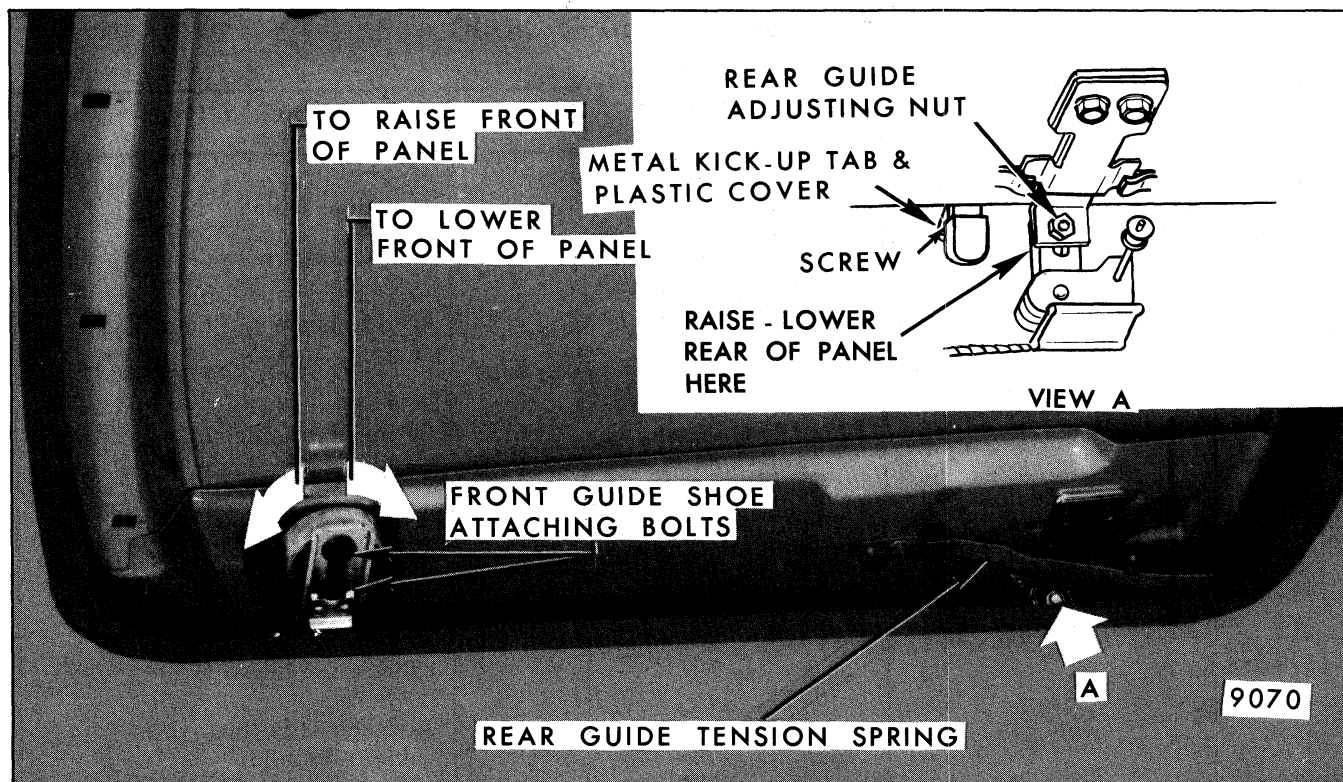


Fig. 8-75-Sun Roof Panel Vertical Adjustment Provisions

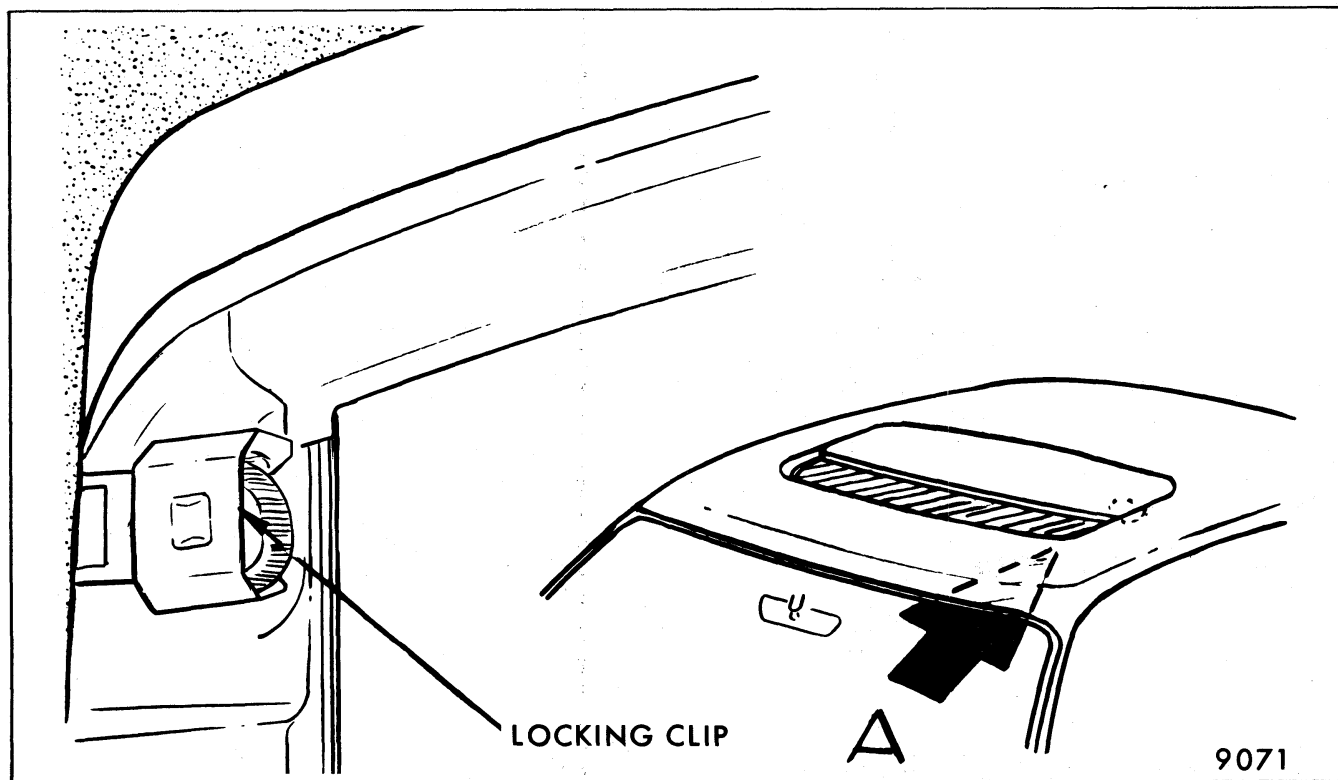


Fig. 8-76-Sun Roof Panel Front Guide Locking Clip Location

2. Raise or lower panel to desired height using serrations provided on lifter link (View "A", Fig. 8-75).
3. After proper alignment is obtained, tighten lifter link nut (20 inch-pounds of torque) (link must be vertical).
4. Adjust opposite rear lifter link in same manner, if required.

Alignment of a Panel That Does Not Run True

1. Close roof panel to determine which side of panel jams.
2. With roof panel closed, remove motor and drive gear assembly (View "A", Fig. 8-74).
3. Align panel within opening to desired position assuring constant margins.
4. Reinstall drive assembly.

Cable Guide Alignment

1. If roof panel jams during its travel, check alignment of front cable guide to side guide rail.
2. If necessary, shim front cable guide for alignment with adjacent side guide rail.
3. If panel fails to rise, check for low battery or check for bent lifter tabs or missing tab covers (Fig. 8-75).

NOTE: Metal kick-up tab is retained by one screw.

MOTOR AND DRIVE GEAR ASSEMBLY

Description

The motor is protected against any stall force imposed upon it by a slip clutch contained within the gear box assembly.

Removal

1. Open sun roof panel.
2. Detach headlining trim lace across front of sun roof opening and remove windshield upper and side garnish moldings.
3. Remove drive pinion cover button and access hole trim at center of windshield header.
4. Remove operating switch (refer "Control Switch - Removal").

5. Carefully detach headlining across front of sun roof opening and windshield header.
6. Remove front cable guide cover screws and safety header pad.
7. Disconnect electrical connectors from motor.
8. Remove motor and drive gear assembly (three attaching bolts) (View "A", Fig. 8-74).
9. Remove motor from sun roof housing.

Installation

NOTE: Before proceeding with the installation, align sun roof panel within the roof opening (refer to "Sun Roof Adjustments").

1. Install motor and drive gear assembly to sun roof housing and drive three attaching bolts.
2. Connect electrical leads to motor. Check operation of sun roof. Adjust if necessary.
3. Install safety header pad and front cable guide attaching screws.
4. Attach headlining and all previously removed parts.

CONTROL SWITCH

Removal

1. Carefully grip switch toggle bezel with fingers and pull switch out from retainer in headlining.
2. Pull electrical connector through opening and disconnect wires.

Installation

1. Install connector wires on color coded switch.
2. Install switch through front of headlining by pressing switch in until retaining clip engages.
3. Test switch for proper function.

HEADLINING PANEL

Removal

1. Open roof panel approximately eight inches.

2. Snap headlining panel out by extracting retaining clips from roof panel front edge (clips remain in headlining assembly).
3. Retract roof panel to full open position.
4. Grasp headlining panel front edge and pull it forward and out of side guide rail lower channels and out of roof opening.

Installation

1. Retract roof panel to full open position.
2. Align headlining panel with side guide rail lower channels and move rearward into sun roof housing (Fig. 8-77).
3. Close roof panel part way, leaving it open approximately three inches.
4. Slide headlining panel forward and secure it to sun roof panel with retaining clips.

SUN ROOF PANEL

Removal

1. Open sun roof approximately eight inches.
2. Remove headlining panel and slide rearward into sun roof housing for stowage. Close sun roof panel.
3. Remove locking clip by pulling inboard (Fig. 8-76).
4. Remove outboard screw from each front guide shoe assembly (Fig. 8-78).
5. Loosen inboard guide shoe screw and rotate

each front guide shoe assembly inboard to clear guide rail (Fig. 8-78).

6. Remove attaching bolts from rear guide retainer plate to sun roof panel. Remove retainer plates (Fig. 8-78).
7. Disengage rear slide tension springs from their respective rollers and pivot springs inboard (Fig. 8-78).
8. Lift roof panel at front edge and pull panel out of roof opening.

Installation

1. With headlining panel in full rearward position, install roof panel into roof opening.
2. Slide front guide shoe assembly along rail and engage with sliding panel.

NOTE: Front guide shoe is installed as a component of the rail assembly.

3. Install outboard screws and tighten both screws on each front guide (14 to 22 inch-pounds of torque) (Fig. 8-78).

NOTE: Guide should not bottom against side guide rail.

4. Install locking clip over front guide adjusting nut (Fig. 8-76).
5. Push roof panel to full forward position by hand.
6. Lift rear of roof panel upward and actuate control switch to position cable assembly at rear guide attaching plate into alignment with attaching holes on roof panel (Fig. 8-78).
7. Install rear guide attaching plate retainer over rear attaching plate and install attaching bolts (14 to 22 inch-pounds of torque). Rotate rear slide tension spring outboard and place on underside of roller (Fig. 8-75).

NOTE: Be sure end of retainer plate is inserted under tabs provided in sun roof inner panel.

8. Check operation of roof panel and note fit of panel to roof. If any adjustments are necessary, refer to "Sun Roof Adjustments".
9. Install headlining on sun roof panel.

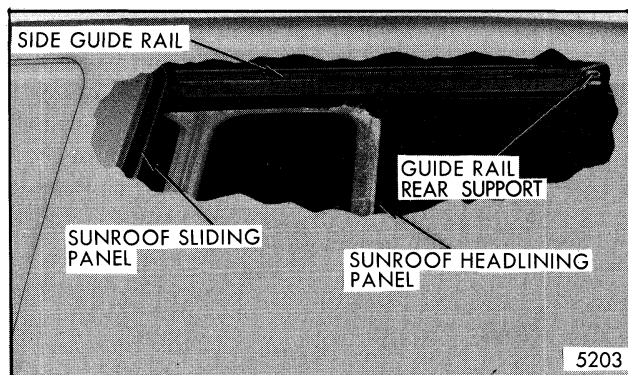


Fig. 8-77-Sun Roof Panel Headlining Engagement in Side Guide Rail

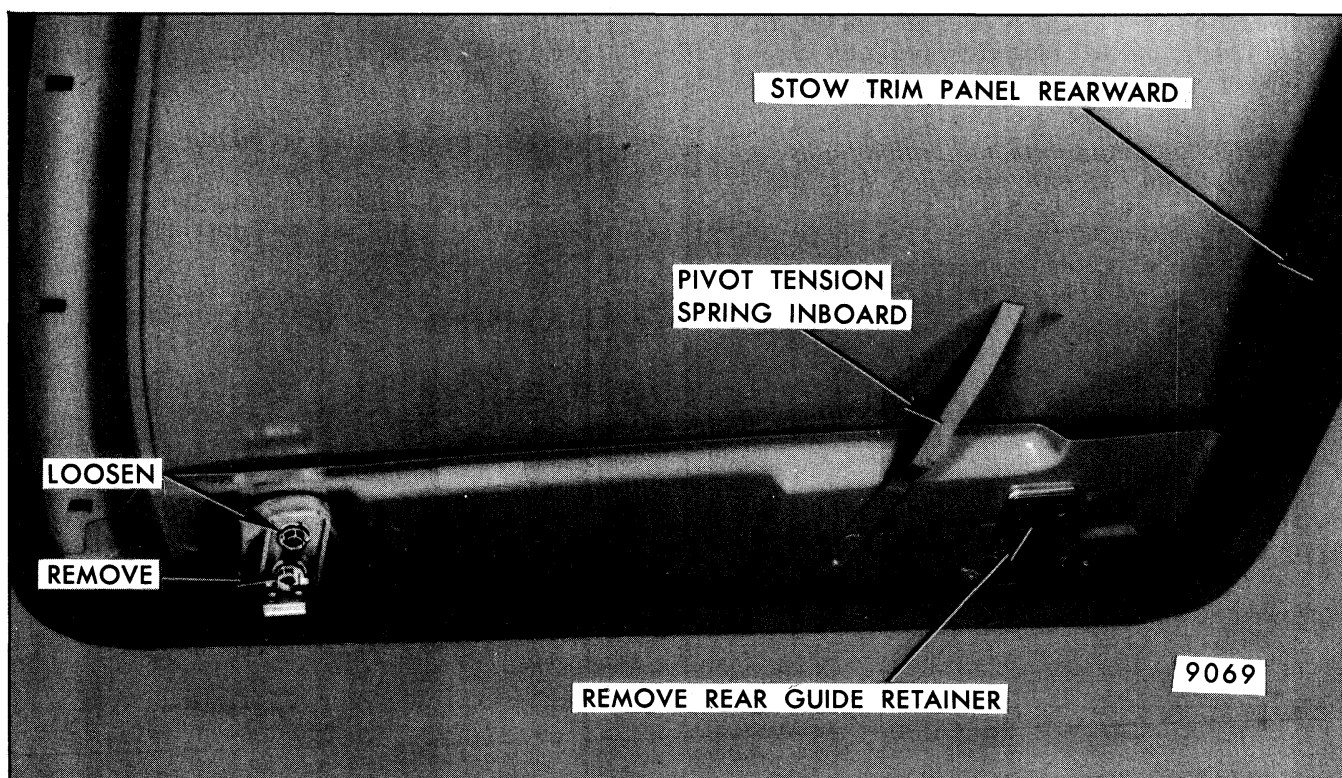


Fig. 8-78-Sun Roof Panel Removal

REAR GUIDE AND CABLE ASSEMBLY

Removal

NOTE: If one cable assembly is defective replace both to assure parallel travel of sun roof.

1. Remove roof sliding panel, motor and drive gear assembly as previously explained.
2. Detach trim lace and headlining at sides of sun roof opening.
3. Working at the top edge of the sun roof opening, remove screws that secure each side guide rail, front stop and front guide cover (Fig. 8-73).

NOTE: No. 8 screws are used at all positions along the side guide rail retainers and front cable cover. No. 10 screws are used at the sliding panel stop location.

4. Remove cable center guide (two bolts) and screws that secure cable front guide.
5. Disengage side guide rail to front rail and pull rear guide and cable assembly forward out of side guide rail.

NOTE: If removal of side guide rail is desired,

pull same forward for disengagement from guide rail rear support (Fig. 8-77).

Installation

1. Lubricate cables and cable channels at cable front guide location with Lubriplate No. 70 or equivalent.
2. Insert guide and cable assembly into proper channel of side guide rail and move guide rearward beyond location of side guide rail retainer.

NOTE: Insert left cable into inboard channel of left guide rail and right cable assembly into outboard channel of right guide rail.

3. Engage front guide with side guide rail and install guide attaching screws.
4. Install side guide rail retainer with screws.
5. Place cable in proper channel of front guide and pull both right and left guide and cable assemblies against respective ramps (rear edge) of side guide rail retainers.
6. Install cable center guide.

7. Install the drive assembly after making sure that both right and left rear slide and cable assemblies are positioned identically (refer step No. 5).

CAUTION: *This operation is critical to assure roof panel alignment and prevent cable damage.*

8. Install sun roof panel as previously explained and cycle panel to check alignment within roof opening. Install cable front guide cover and sliding panel front stop with screws.
9. Install all remaining hardware and trim components.

SUN ROOF HOUSING DRAIN HOSE REPLACEMENT

Removal and Installation - Front

1. Remove windshield and roof side trim moldings

in the affected area and detach headlining sufficiently to gain access to top of either drain hose (Fig. 8-79).

2. Remove shroud side trim panel.
3. Relieve hose clamp and remove hose from drain tube at top and from grommet in front body hinge pillar lower panel.
4. Tape or tie new hose to lower end of old hose and pull new hose into position while removing old hose.
5. Secure new hose to drain tube outlet with hose clamp. Rotate ends of hose clamp to face out-board.
6. Insert lower end of hose through grommet in front body hinge pillar lower panel.
7. Install headlining and all previously removed parts.

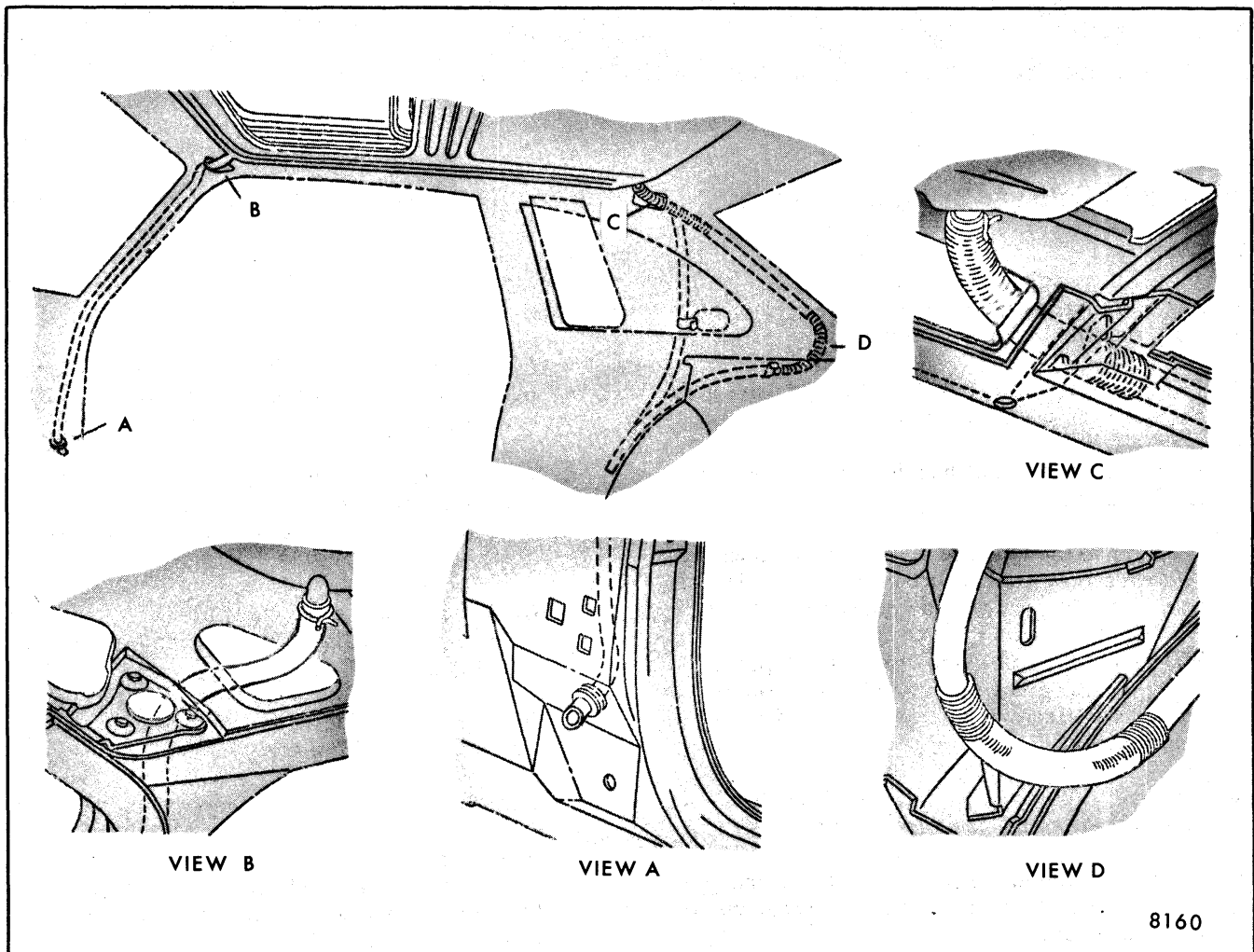


Fig. 8-79-Sun Roof Drain Hose Routing

Removal and Installation - Rear

1. Remove quarter and back window trim moldings, quarter upper trim panel and detach headlining sufficiently to gain access to top of either drain hose (Fig. 8-79).
2. Loosen hose clamp and remove hose from drain tube at top.
3. Remove conduit ("37" styles) from hose and tape or tie a piece of wire to the upper end of old hose.
4. Detach hose from clip at quarter inner panel on "57" styles or wheelhouse pinchweld flange on "37" styles (Fig. 8-79). Without disturbing upper end of hose, pull lower (free end) of hose rearward over wheelhouse on "37" styles or through access hole in quarter inner panel on "57" styles.
5. Tape or tie end of new hose with angle cut to lower end of old hose ("57" styles) and pull new hose into position while removing old hose. On "37" styles pull hose with wire attached rearward and tape or tie new hose to wire and pull new hose into position and install conduit over hose (Fig. 8-79).

NOTE: When installing new hose, be certain hose is same type as removed.

6. Secure new hose to drain tube with hose clamp. Rotate ends of hose clamp to face outboard.
7. Pull hose rearward from the rear compartment area ("37" styles) and downward through sail access hole ("57" styles) to remove possible kinking at the drain tube attachment.
8. Route hose as specified and insert in clip at original location (Fig. 8-79).
9. Attach headlining and install all previously removed moldings.

SUN ROOF OPENING WEATHERSTRIP

The sun roof opening weatherstrip is fabricated of flock-coated rubber and is retained at the front and sides of the roof opening by attaching screws (Fig. 8-80).

Removal and Installation

1. Retract sun roof to full rearward position.

2. Remove attaching screws holding weatherstrip and supports to roof panel flange, and remove weatherstrip and supports (Fig. 8-80).
3. To install, reverse the removal procedure.

NOTE: Specific roof opening weatherstrips are to be installed for use with vinyl or painted sliding panels.

SUN ROOF PANEL WEATHERSTRIP

Two weatherstrips and deflectors are used at the rear of the sun roof sliding panel (Fig. 8-81). The deflectors are located at each rear corner of the sliding panel retained by black weatherstrip cement at rear and a plastic drive fastener forward. The forward weatherstrip is positioned on the vertical surface of the rear flange by attaching screws, and the other along the rear horizontal retained by cement and two screws positioned 1/4 inch from the outboard edge of the panel and engagement over the panel rear vertical flange and deflector.

Removal

1. Remove sun roof panel as previously described.
2. Remove attaching screws to detach forward rear weatherstrip (No. 1).
3. Remove two attaching screws and break weatherstrip cement bond with a flat-bladed tool to detach rear weatherstrip (No. 2).
4. Remove plastic drive fastener with door weatherstrip remover tool J-21104 or equivalent and break deflector cement bond with a flat-bladed tool.

Installation

1. Remove weatherstrip cement remaining on sliding panel rear flange.
2. Position and install deflector at each rear corner of sliding panel with black weatherstrip cement (cement water deflectors to horizontal surface of sliding panel rear flange in order to provide a secure base for ends of rear weatherstrip). Complete forward attachment of deflector with a plastic fastener, Part No. 4841194, or equivalent.

NOTE: Do not over stretch deflector during this

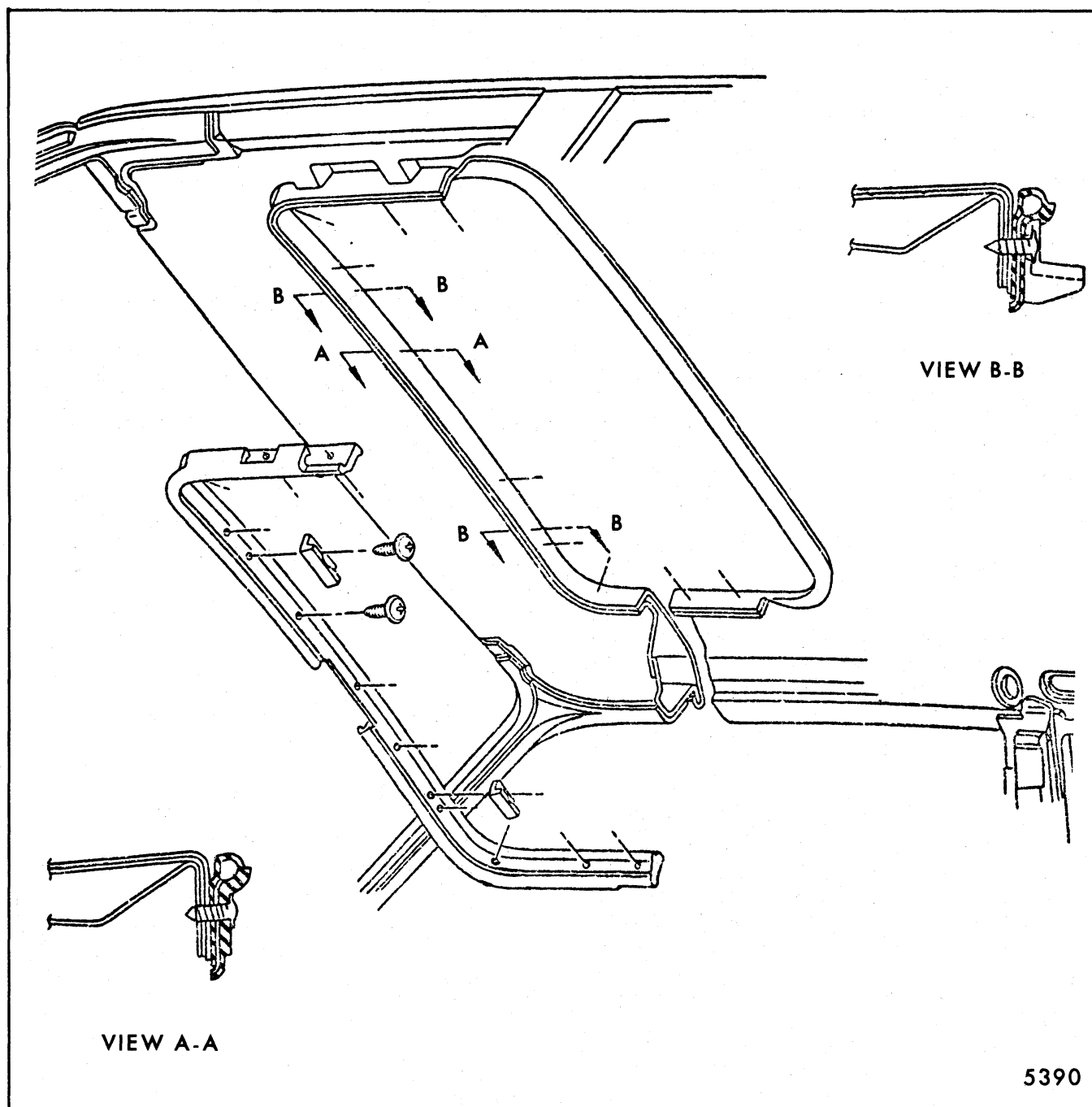


Fig. 8-80-Sun Roof Opening Weatherstrip

- operation. Over stretching will cause the deflector to curl inboard, defeating its purpose.
3. Weatherstrip No. 2, clean surface with a suitable cement solvent.
 4. Apply weatherstrip cement to weatherstrip and sliding panel rear flange.
 5. After cement becomes tacky, position and bond

weatherstrip to panel.

6. Weatherstrip No. 1, position weatherstrip to panel and drive attaching screws and seal the screws with caulking compound or similar material as shown in Figure 8-81.
7. Install sun roof panel.

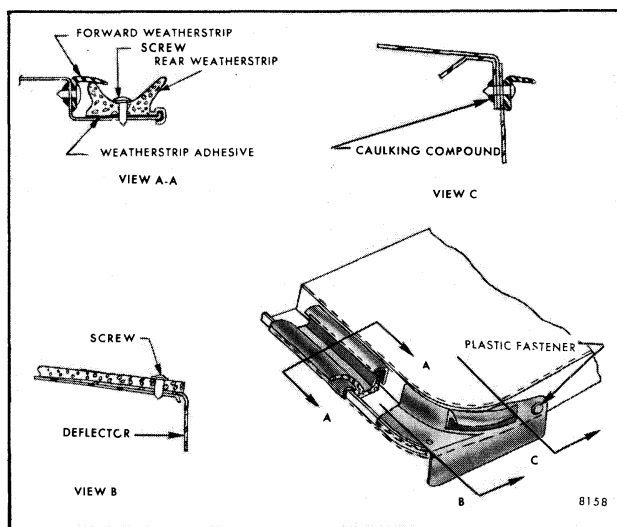


Fig. 8-81-Sun Roof Panel Weatherstrip

SUN ROOF HOUSING ASSEMBLY

The sun roof housing assembly, complete with hardware, may be removed as follows (Fig. 8-82):

Removal

1. Retract the sun roof panel to half-open position.
2. Remove control switch and winding gear access plug.
3. Remove headlining as outlined in headlining section of this manual.
4. Disconnect four drain hoses at the sun roof housing drain tubes (Fig. 8-79).
5. Disconnect motor electrical leads.
6. Support sun roof housing assembly and remove nuts and screws that retain housing to roof inner panel (Fig. 8-82). Lower and remove sun roof housing.

Installation

1. Raise sun roof panel and index with studs of adapter ring of roof inner panel.

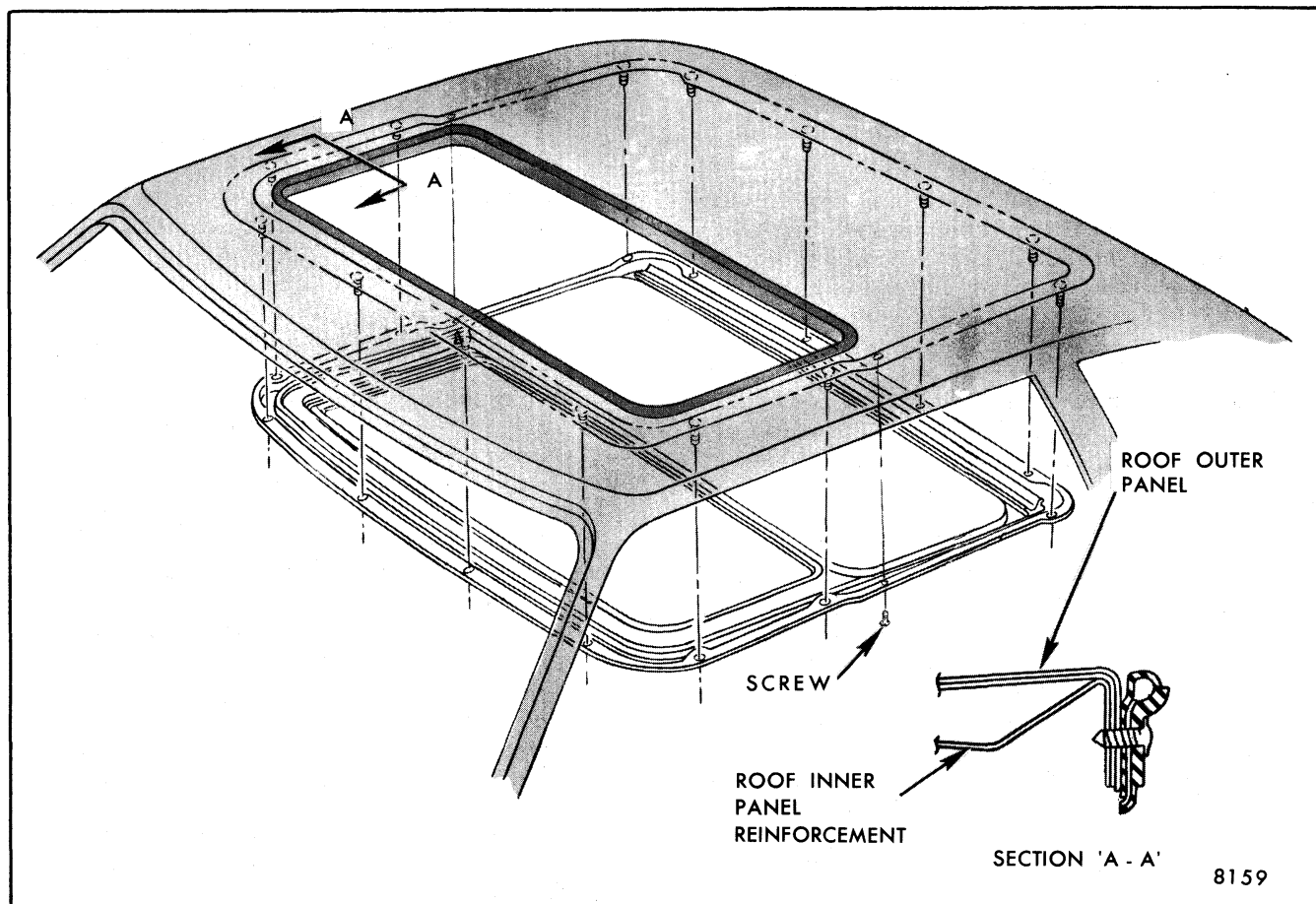


Fig. 8-82-Sun Roof Module (Complete Installation)

2. While supporting housing in position, install screws and drive retaining nuts. Torque nuts to 48 to 72 inch-pounds.
3. Connect drain hoses to housing drain tubes at each corner. Rotate ends of hose clamps to face outboard and pull hoses rearward or downward to eliminate kinking of hoses at housing location.
4. Replace all trim and hardware previously removed.

SUN ROOF LUBRICATION

Description

All mechanical components that have relative mo-

tion with other parts are lubricated during assembly. If additional lubrication is required, the specified materials or their equivalents as stated here should be used.

Due to the proximity of sun roof hardware parts to soft trim components, observe the following recommendations during regular service:

1. During cable replacement, lubricate cables with No. 70 Lubriplate or equivalent.
2. It is not necessary to lubricate top surface of guide rail covers or guide rail lower channels.
3. Periodically clean off any dirt that may have accumulated on guide rail covers.

FOLDING TOP - "E" Styles

DESCRIPTION (Fig. 8-83)

"E" Convertible Styles feature an "inward" folding top. The convertible top involves a precise adjustment procedure which must be performed as outlined in this section.

Side roof rails are hinged at the front, center and rear. The hinging design enables the side roof rails to fold "inwardly" when the top is lowered. The roof cross bows and trimstick stack to the rear of the side rails. The back window stacks under the roof rails and bows.

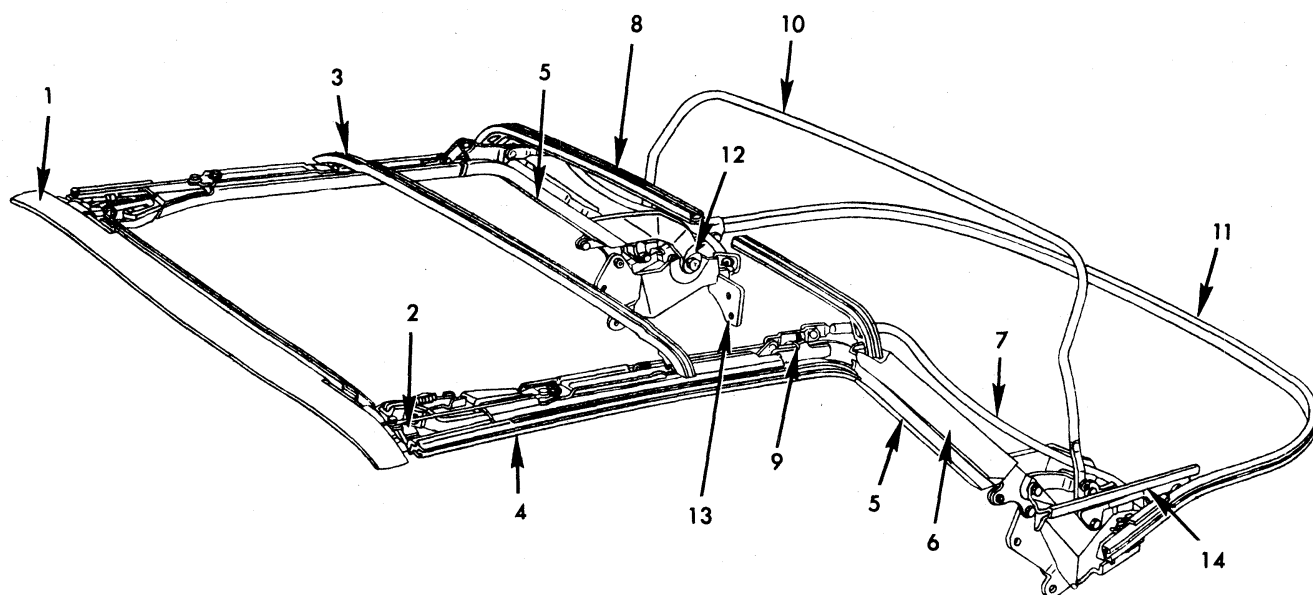
The inward folding top stacks to a flush position in the folding top compartment. The folding top well is shorter in length and provides full-width rear seat back comfort and leg room comparable to closed body styles.

Operation of the top is controlled by an electric switch. The top is powered by a reversible electric motor and two gear reduction units. One gear reduction unit, at the motor, operates the drive cables. Other gear reduction units are integral with the top actuator assemblies at each main hinge. Drive cables supply power to the actuators which, in turn, multiply the power to operate the top. During top operation, the solid-tempered glass back window is controlled by a guide control link and spring at each lower corner. The inward folding top gutter of convertible top trim construction controls drainage of water at the rear belt rail.

The left side rail folds before the right rail upon stacking. The side rail folding sequence causes the front roof rail to be non-parallel to the ground during top operation. When the top is raised and not locked to the windshield header, a non-parallel condition may exist between the front roof rail and the windshield header. This condition is considered normal if a manual assistance not greater than 30 pounds is required to position the locating pin into the striker guide hole. The left side of top should always be located and locked to the windshield header first.

CAUTION: *Before lowering the top, check the folding top compartment inside the car and in the rear compartment. Remove all luggage and parcels from the folding top compartment inside the car. Also, if necessary, clear away any luggage or miscellaneous parcels in the rear compartment which may have slid forward into the folding top compartment storage area. Failure to do so could result in breakage of the back window glass or damage to the folding top mechanism during operation of the top.*

To raise top, always lock left side before locking right side. Pull down on front roof rail with one hand, positioning the left locating pin into the striker hole. Manual assistance of up to 30 pounds may be required to position locating pin in the windshield header.



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Fig. 8-83-Inward Folding Top Hardware Components

- | | | | |
|-------------------------------------|--------------------------------|-------------------------------------|------------------------------------|
| 1. Front Roof Rail | 6. Side Roof Outer Rear Rail | 9. Side Roof Rail Set Screw | 12. Folding Top Actuator Assembly |
| 2. Front Roof Rail Lock | 7. Side Roof Rear Control Link | 10. Rear Roof Bow and Link Assembly | 13. Main Hinge |
| 3. Front Roof Bow and Link Assembly | 8. Center Bow Assembly | 11. Rear Belt Rail Trimstick | 14. Folding Top Cover Pressure Bar |
| 4. Side Roof Front Rail | | | |
| 5. Side Roof Inner Rear Rail | | | |

FOLDING TOP TRIM

FOLDING TOP COVER AND BACK CURTAIN ASSEMBLY

Removal

NOTE: Before removal operations are started, check and specifically note alignment condition of back curtain and top cover. Conditions such as wrinkles, draws, excess material, etc., can be corrected by adjusting trim material during assembly operations.

1. Apply protective covers to car as follows:

a. On rear deck section of car, particularly area adjacent to quarter belt finishing moldings, apply heavy padded cover to protect moldings and paint finish. Mask securely in place.

b. On interior trim, floor and hood, use conventional covers.

2. With top lowered, detach top cover at front roof rail as follows (Fig. 8-84):

a. Remove front roof rail front weatherstrip.

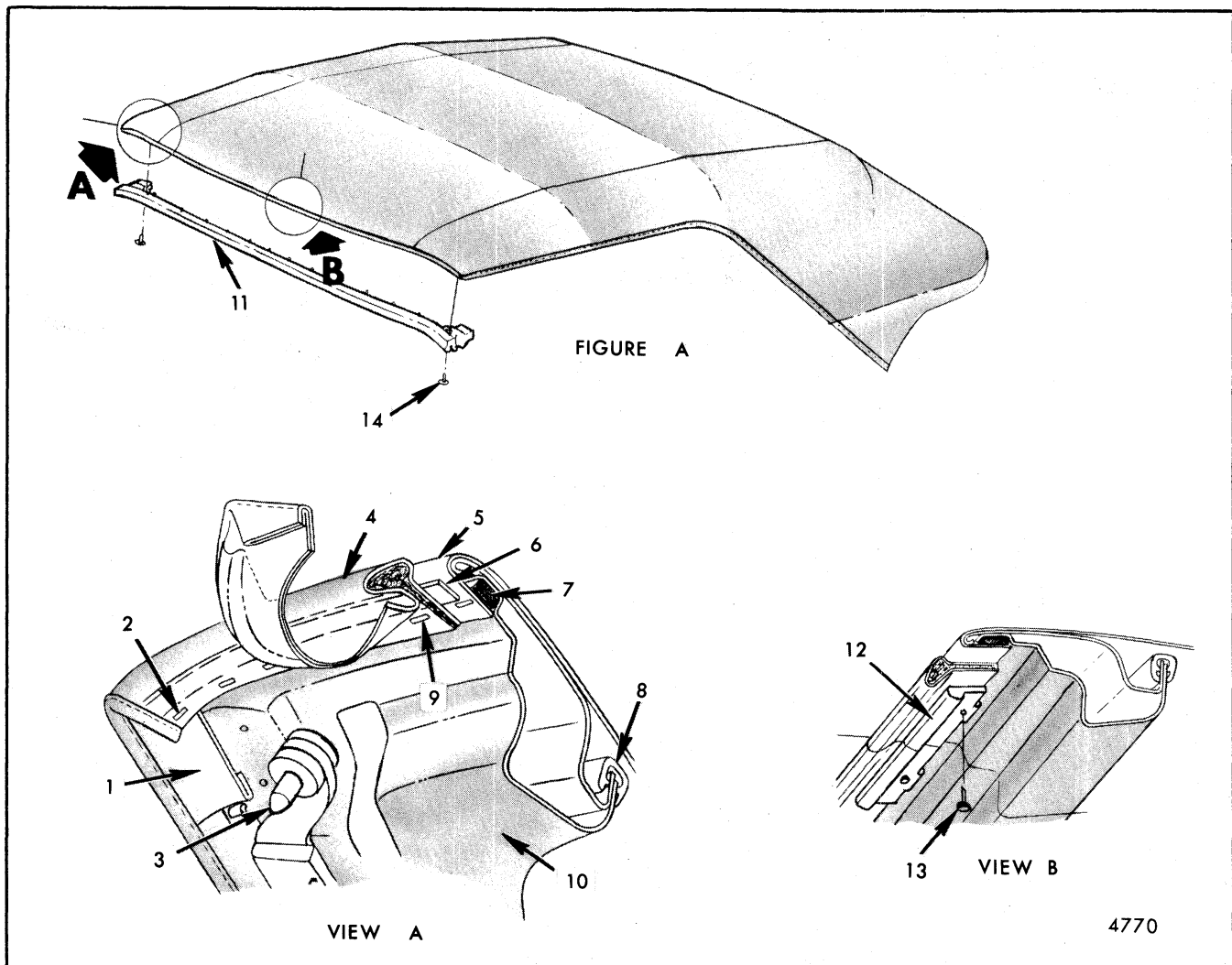


Fig. 8-84-Front Roof Rail Parts Attachment

- | | | | |
|---------------------------------|---|---------------------------------------|---|
| 1. Top Cover Corner Retainer | 4. Front Roof Rail Front Weatherstrip | 8. Pinchweld Finishing Lace | 12. Front Roof Rail to Windshield Header Spacer |
| 2. Staple Securing Top Cover | 5. Top Cover | 9. Staple Securing Front Weatherstrip | 13. Spacer Attaching Nail |
| 3. Front Roof Rail Locating Pin | 6. Front Weatherstrip to Top Cover Sealer | 10. Front Roof Rail | 14. Attaching Screw |
| | 7. Tacking Strip | 11. Front Roof Rail Rear Weatherstrip | |

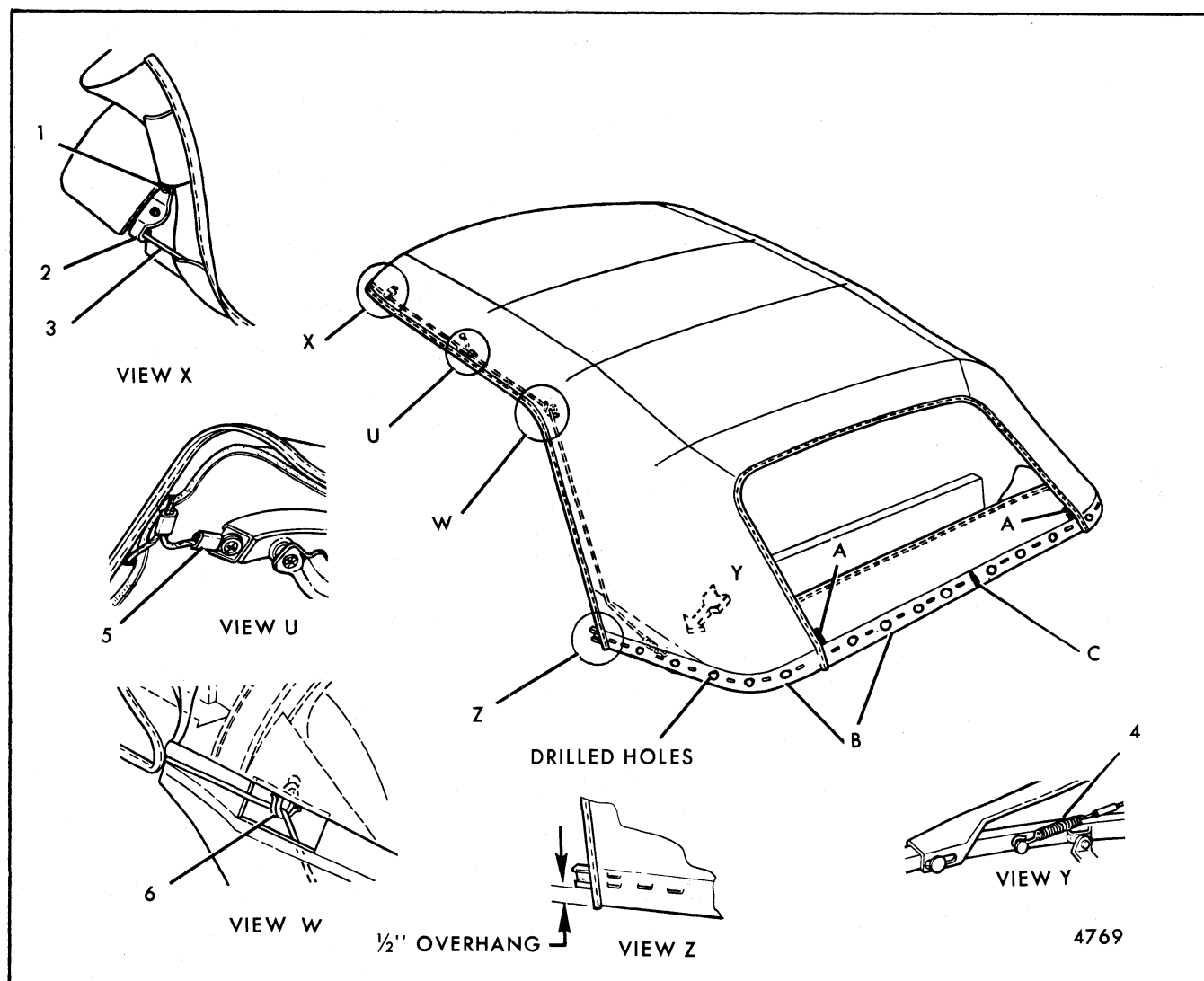


Fig. 8-85-Hold-Down Cable Attachment and Convertible Top Reference Marking

- | | | |
|----------------------------------|--|--|
| 1. Front Attaching Screw | 4. Hold-Down Cable Rear Spring (Left Side is Shown, Connect Right Side with Hook Downward to Hold Spring Flat Against Trimstick) | 5. Hold-Down Cable Loop Retainer |
| 2. Hold-Down Cable Front Bracket | | 6. Folding Top Material Hold-Down Cable Retainer |
| 3. Hold-Down Cable | | |

- b. Detach front roof rail rear weatherstrip at outer ends.
- c. Detach top cover from front roof rail.
- d. With top a short distance above windshield header, remove attaching screws, loosen metal tabs and detach hold-down cables at front (Fig. 8-85).
- e. Detach hold-down cables from front bow

and side roof rail rear (View "U" and "W", Fig. 8-85).

WARNING: CONTROL LINKS ARE UNDER SPRING TENSION AND MUST BE DETACHED WITH CARE TO AVOID PERSONAL INJURY AND/OR DAMAGE TO TRIM MATERIAL. FOR DETACHMENT INSTRUCTIONS SEE "BACK WINDOW GUIDE CONTROL LINK AND SPRING - REMOVAL AND INSTALLATION" (FIG. 8-99).

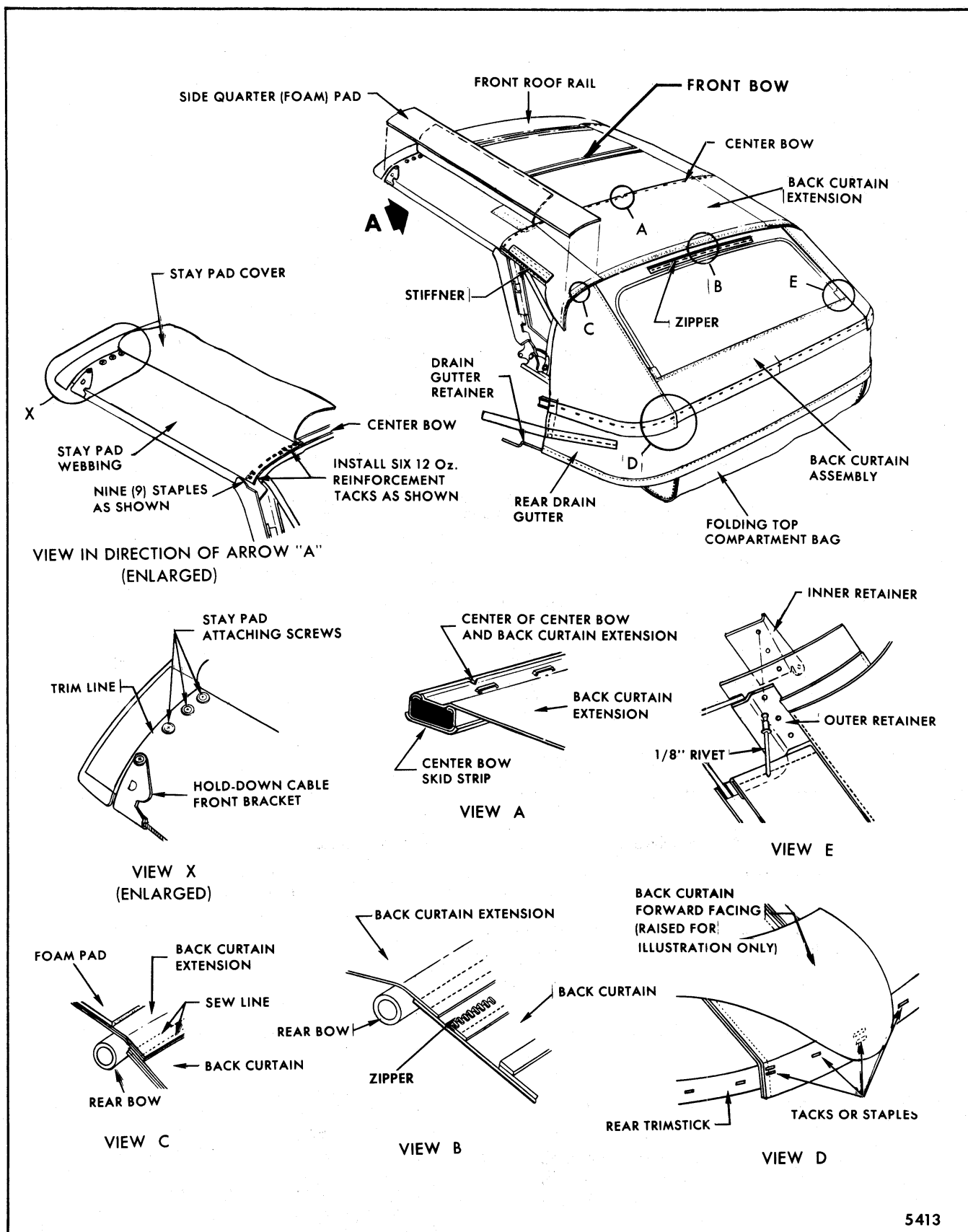


Fig. 8-86-Back Curtain Assembly Attachment and Reference Marking

3. With top raised, detach guide control links from lower corners of back window, slip compartment bag over links and lay links on floor.
4. Lower top halfway, rotate windows to down position and remove side roof rail rear weatherstrips. Mark reference locations of quarter retainers on side rails (Fig. 8-87) and detach cemented retainers from side rails.
5. Prepare center bow, rear trimstick and rear gutter assemblies for raising above body belt line as follows:
 - a. With front roof rail several inches above windshield header, remove lower rear bolt (View "B", Fig. 8-88) securing trimstick to main hinge on each side. Bolt is removable toward inside of body. Welded anchor nut remains on trimstick.
 - b. In rear compartment, detach gutter retaining rod from attaching clips (Fig. 8-94). Use care to prevent puncturing or tearing gutter during detachment. A total of five attaching clips are located as follows: one on each side of rear compartment lid hinges and one at rear center. Then detach each end of retaining rod from body by moving rod rearward.

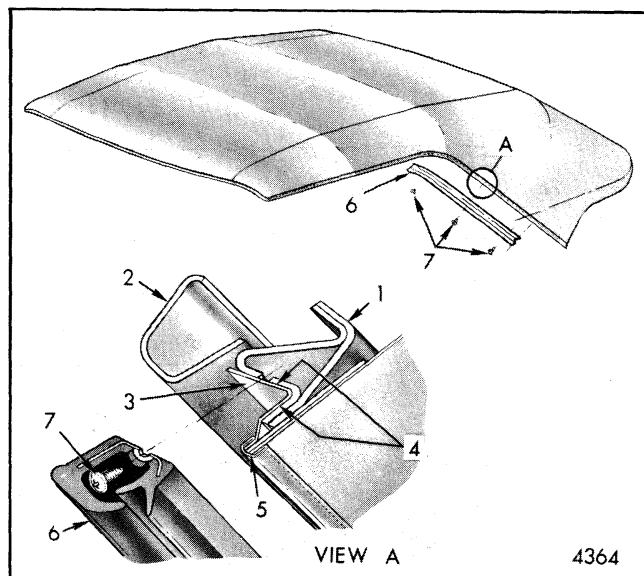


Fig. 8-87-Side Roof Rail Rear Weatherstrip and Quarter Retainer Attachment

- | | |
|---|---|
| 1. Side Roof Outer Rear Rail | 4. Cementing Surfaces for Retainer |
| 2. Side Roof Inner Rear Rail | 5. Retainer Seam Aligned with Outer Rear Rail |
| 3. Top Cover Rear Quarter Retainer (Flap) | 6. Side Roof Rail Rear Weatherstrip |
| | 7. Attaching Screw |

- c. With top lowered about halfway, remove front bolt and nut on each side (View "A", Fig. 8-88) securing center bow assembly to main hinge. Bolt enters through bushing and threads into main hinge. Bolt is then secured with lock nut. Bushing is retained in outer rail and contacts main hinge.

NOTE: In some cases, access to bolt may require some deflection of quarter upper rear sealing strip which is metal reinforced and can be restored to proper alignment. Avoid losing nut or bolt behind trim by blocking adjacent openings with shop towels.

6. Lift rear trimstick, center bow and gutter assemblies as follows:
 - a. On one side of body, spring trimstick, center bow and gutter assembly inward. Check and position gutter retaining rod and trimstick to assure that they are clear for removal.
 - b. Lift trimstick, center bow and gutter assembly forward and upward as shown in Figure 8-89.
 - c. Duplicate lifting operation on opposite side of body, and position center bow, rear trimstick and gutter assembly on protected rear deck of car (Fig. 8-90).
7. With suitable marking tool, such as pointed felt tipped pen or tailor's chalk, accurately mark reference lines on top trim material as follows:
 - a. Vertical edge references of top cover on back curtain at trimstick (Item "A", Fig. 8-85).
 - b. Mark bottom of trimstick reference on top cover and back curtain in window opening (Item "B", Fig. 8-85).
 - c. Center mark on trimstick and on back curtain (Item "C", Fig. 8-85).
 - d. Reference mark at two inch intervals along centerline of trimstick on top cover and back curtain (Figs. 8-85 and 8-91). Remove staple or tack which may be at reference location.
 - e. Using a quarter (1/4) inch drill bit, drill hole at each reference location. Drill hole only partially into trimstick. DO NOT drill completely through trimstick.
8. With staple removing tool, such as narrow screwdriver, detach both sides of top cover from trimstick. Pull top cover upward and complete marking lower edge reference of trimstick on back curtain (Fig. 8-91).

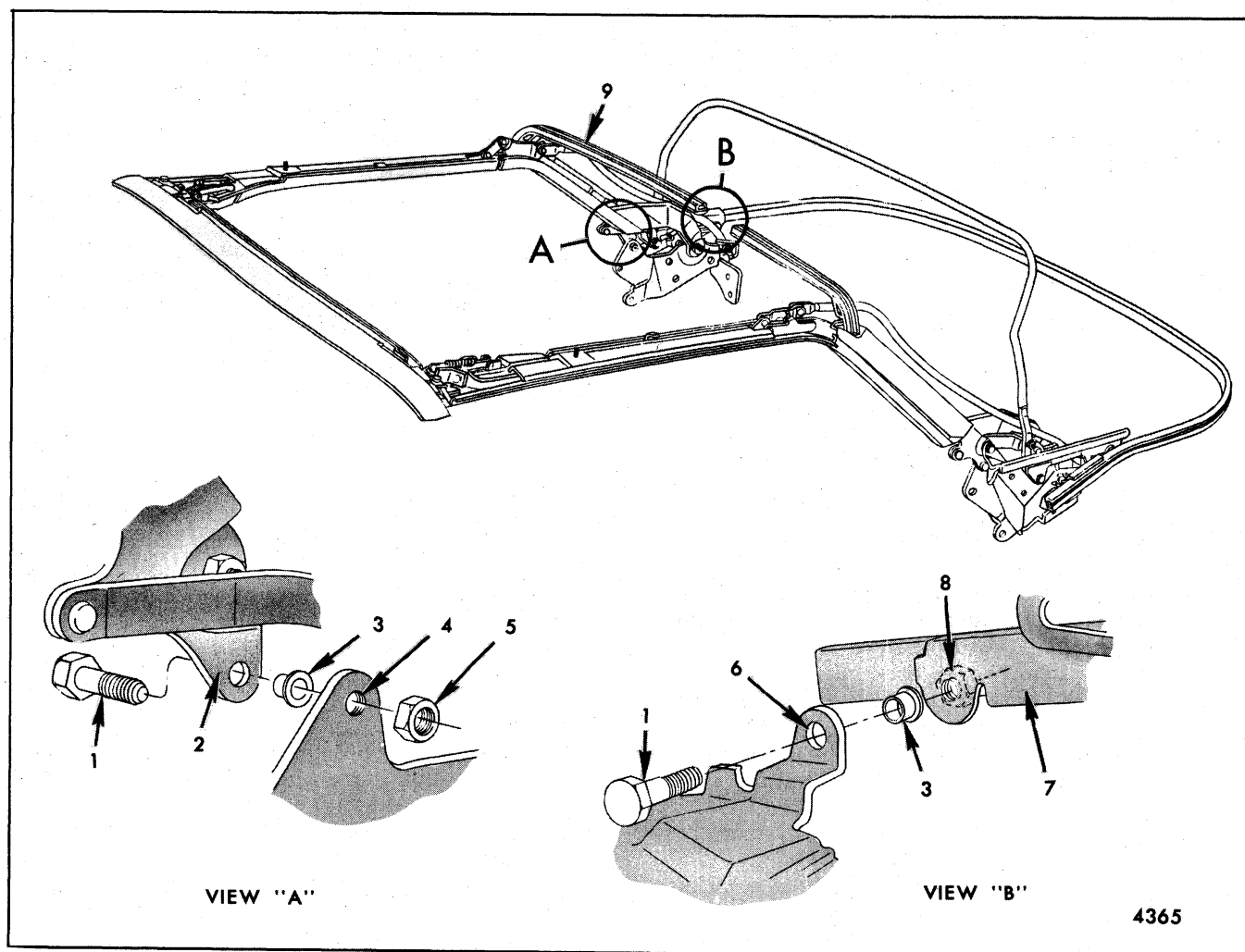


Fig. 8-88-Center Bow Assembly and Rear Trimstick Attachment

- | | | | |
|--|--------------------------------|---|-----------------------------------|
| 1. Attaching Bolt | 3. Bushing | 6. Main Hinge | 8. Anchor Nut (Part of Trimstick) |
| 2. Side Roof Outer Rear Rail (Part of Center Bow Assembly) | 4. Threaded Hole in Main Hinge | 7. Rear Trimstick (Part of Center Bow Assembly) | 9. Center Bow |
| | 5. Lock Nut | | |

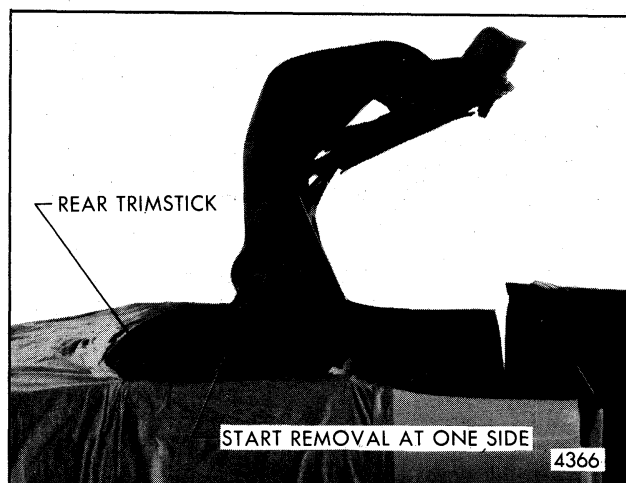


Fig. 8-89-Lifting Rear Trimstick from Body

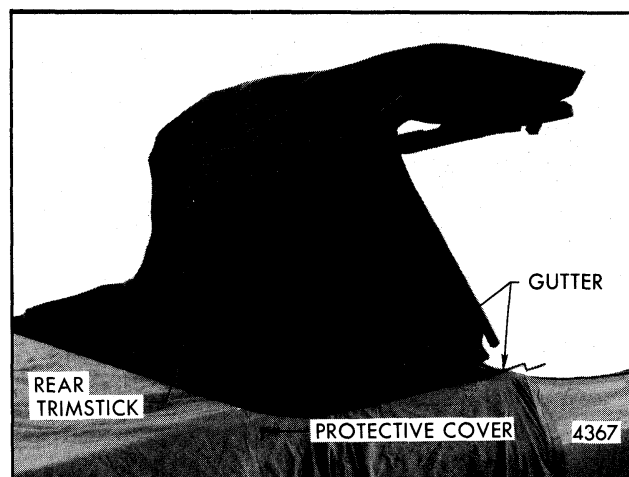


Fig. 8-90-Rear Trimstick on Rear Deck of Car

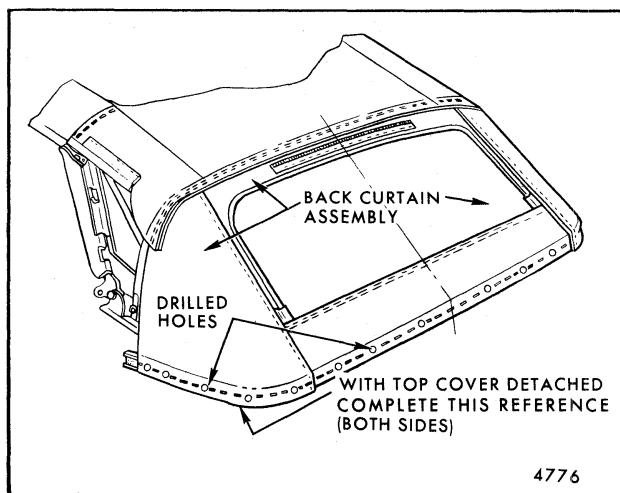


Fig. 8-91-Completing Reference Marking on Back Curtain

9. Pull top cover upward and detach hold-down cable rear spring from each side of trimstick (View "Y", Fig. 8-85).
10. Remove hold-down cables from listing pockets by pulling springs through listing pockets.

11. Turn front of top cover rearward for access to front listing. Detach front listing from front roof bow (View "A", Fig. 8-92).
12. Unzip top cover from back curtain (View "C", Fig. 8-92).
13. Turn rear of top cover forward for access to rear listing. Detach rear listing from center bow (View "B", Fig. 8-92) and remove top cover.
14. Detach and remove back curtain assembly as follows:
 - a. Detach side quarter foam pad from back curtain extension up to center bow (Fig. 8-86). If pad(s) are damaged during removal, they should be replaced with equivalent soft, foam rubber material. Use sharp blade, like razor, and carefully cut cemented bond while gently lifting foam pad.
 - b. Mark center on back curtain and on adjacent folding top parts as follows:
 1. At front - on back curtain extension and on

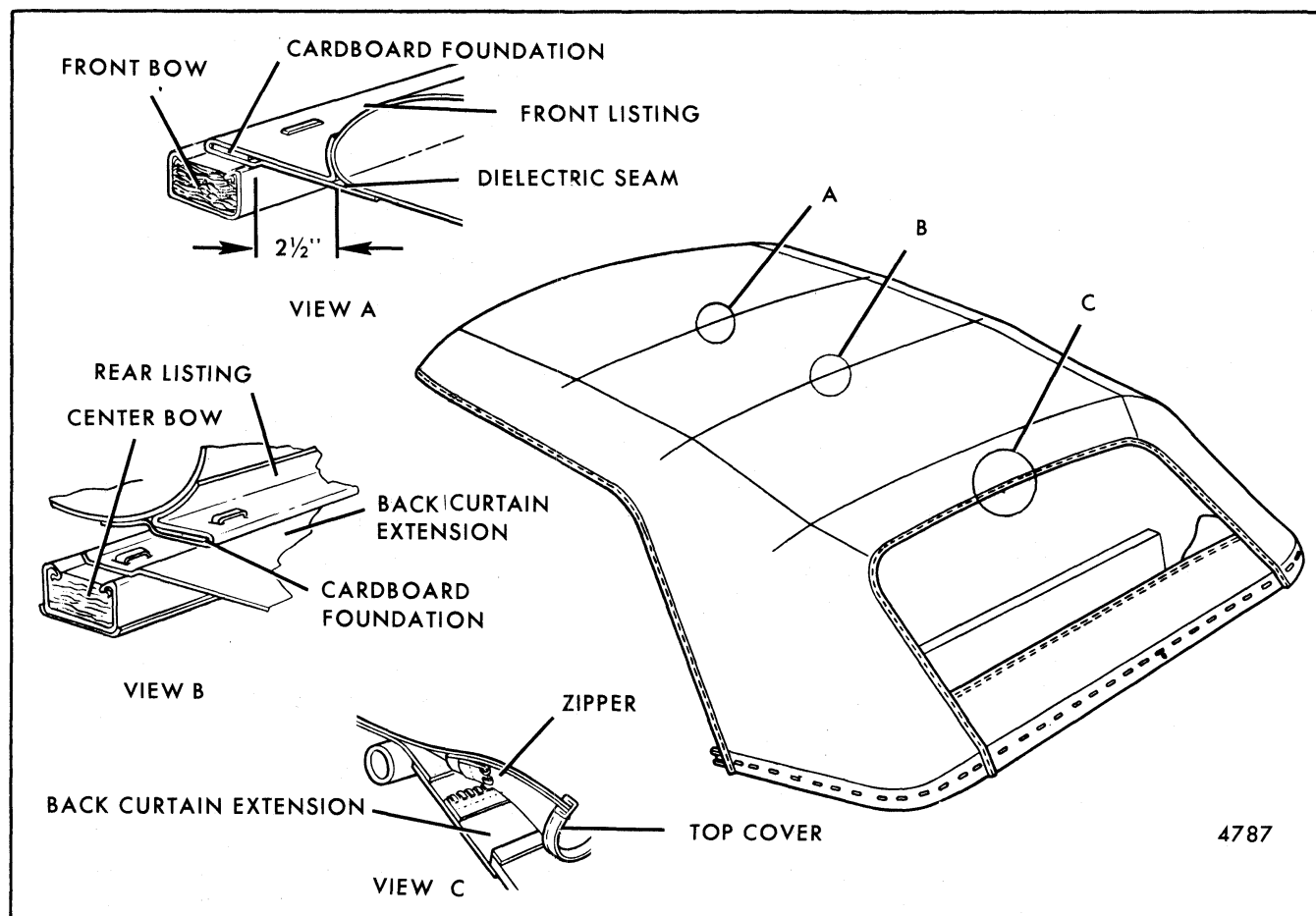


Fig. 8-92-Top Cover Attachment at Front and Center Roof Bows

center roof bow (View "A", Fig. 8-86).

2. At rear - on back curtain lower inner valance and on gutter material at trimstick.
- c. Detach back curtain from rear trimstick. Note how folded material is secured below back window sides (View "D", Fig. 8-86).
- d. Detach back curtain extension from center bow and remove back curtain assembly.

Installation

1. Since original top cover and back curtain are being replaced, transfer reference marking from original back curtain and top cover to replacement parts as follows (Figs. 8-85 and 8-91):
 - a. Using scissors or equivalent sharp cutting tool, remove excess overhang material from top cover and back curtain at reference "B", Figure 8-85.
 - b. Lay new back curtain flat on clean surface with inside face down. Position original back curtain over new one matching corners of back window openings. Carefully position trim material flat in all directions.
 - c. With back window openings in alignment, accurately transfer trimstick reference to bottom of new back curtain by following along lower cut valance of original back curtain. Use a suitably pointed and legible marking pencil or tailor's chalk (Item "B", Fig. 8-85 and Fig. 8-91).
 - d. Transfer center reference mark from original back curtain to new curtain at front (on extension, View "A", Fig. 8-86) and at rear (on valance, Item "C", Fig. 8-85).
 - e. Transfer top cover vertical edge reference from original back curtain to new curtain (Item "A", Fig. 8-85).
 - f. Using drilled holes on original back curtain as reference, punch holes in new back curtain.
 - g. Place new top cover flat on clean surface with inner surface down. Position original top cover over new cover. Carefully align top cover sides, back window opening upper corners, and rear quarter upper corners.
 - h. With both covers in alignment, transfer trim-

stick references, right and left, to bottom of new top cover by marking along cut rear edges (Item "B", Fig. 8-85).

- i. Using drilled holes on original top cover as reference, punch holes in new top cover.
 2. Install back curtain assembly as follows:
 - a. Position center of new back curtain extension on center of center bow. Front edge of extension should be flush with front rib of center bow. Staple or tack extension to center bow. Start at center, keep trim material flat, and space tacks or staples about two inches apart (View "A", Fig. 8-86).
 - b. With aid of helper, align rear center of back curtain with center of trimstick. At same time, carefully align horizontal reference mark on back curtain with lower edge of trimstick. Also align punched holes in back curtain with drilled holes in trimstick.
- NOTE:** Original back curtains are stretched to a degree upon installation. Replacement back curtains are not stretched. During this operation, allow for uniform stretch in material for proper final appearance.
- c. Working from center, staple or tack back curtain to trimstick. Maintain alignment of reference locations at trimstick, and keep material flat to trimstick between fasteners.
 - d. Fold back each side of curtain, shown in View "D", Figure 8-86, and install three staples or tacks at this location.
 - e. Space staples or tacks about two inches apart (about 40 tacks or staples). Avoid excessive stretching of material (Fig. 8-86).
 - f. Allow 1/2 inch of back curtain to overhang rear trimstick. Using scissors, cut off excess material beyond 1/2 inch overhang (View "Z", Fig. 8-85).
 3. Cement original or replacement side quarter (foam) pad (Fig. 8-86) between center bow and rear bow on each side. If pad(s) from center to rear bow were damaged upon removal, replace them with equivalent foam rubber material.
 4. Fold replacement top cover assembly in half as shown in Figure 8-93. Determine precise centerline of top cover and carefully mark center of top cover on listings for front bow and center bow.
 5. Transfer cardboard foundations from original

top cover, or install replacement foundations in front and center bow listing pockets as shown (View "A" and "B", Fig. 8-92).

6. Insert hold-down cables in top cover. Use a length of welding rod to facilitate insertion (Fig. 8-85).
7. Position center of top cover rear listing on center bow and staple or tack in place. Space fasteners about two inches apart (View "B", Fig. 8-92).
8. Zip top cover to back curtain (View "C", Fig. 8-92).
9. Attach hold-down cable rear spring to each side of trimstick (View "Y", Fig. 8-85).
10. With aid of helper, install top cover as follows:

- a. Align top cover at rear vertical reference marks and at trimstick horizontal reference (Items "A" and "B", Fig. 8-85). Also align punched holes in top cover with holes in back curtain and trimstick. With helper holding trim in aligned position, double tack or staple at this position using 12 ounce tacks or staples or equivalent.

NOTE: Original top covers are stretched to a degree upon installation. Replacement top covers are not stretched. During installation, allow for uniform stretch in new cover for proper final appearance.

- b. Apply trim cement to lower area of side roof

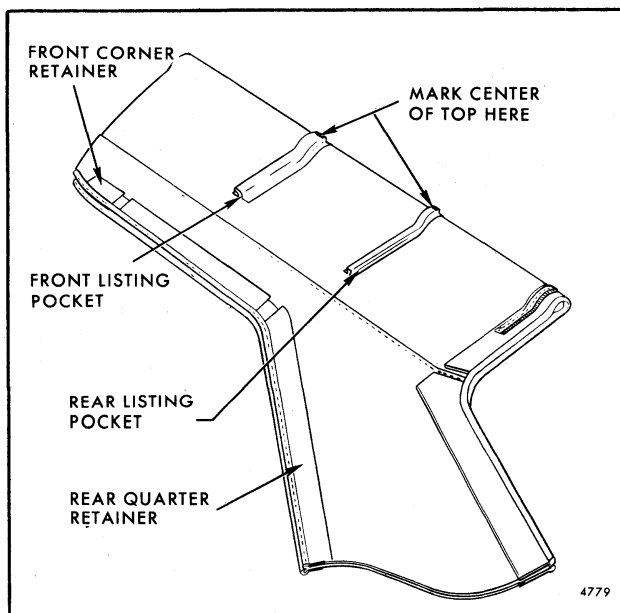


Fig. 8-93-Determining Center of Top Cover

rear rail and to top cover quarter retainer (flap). Center top (laterally) by aligning horizontal reference on each side at trimstick. Secure quarter retainer (flap) at bottom. Also, double staple or tack top cover at front of trimstick (Fig. 8-87 and View "Z", Fig. 8-85) using 12 ounce tacks or equivalent staples.

- c. Align top cover horizontal reference at center (in accordance with steps a and b above) and staple or tack in place. Work left and right from center. Keep material in alignment and flat. Avoid stretching. Space staples or tacks about two inches apart.
- d. Trim off excess material beyond 1/2 inch overhang (Fig. 8-85).

NOTE: If diagnosis prior to top cover removal revealed particular conditions (such as loose material, etc.), the conditions can be corrected by adjusting top cover on trimstick in steps a, b and c above.

11. Position rear trimstick, center bow and gutter assembly into body in reverse order of removal. With top half-lowered, start one end of trimstick and gutter into body, then position opposite end into body.
12. Secure trimstick, center bow and gutter assembly to body as follows:
 - a. Manually raise top to up position. Secure back window guide control links. For attachment of control links see "Back Window Guide Control Link - Removal and Installation" (Fig. 8-99).
 - b. Raise top several inches above windshield header. Install bushing in main hinge, align trimstick to main hinge attaching holes and install trimstick attaching bolts (View "B", Fig. 8-88). Use care to avoid dropping bolt. To avoid losing bolt, block openings at wheelhouse with several shop towels.
 - c. Lower top halfway. With bushing properly positioned in each outer rail, install attaching bolts (View "A", Fig. 8-88) securing outer rail to main hinge. Each bolt threads into hinge and is secured with lock nut.
 - d. Secure rear gutter retaining rod to clips on body as shown in Figure 8-94.
13. Secure top cover front listing to front roof bow as follows (Fig. 8-92):

- a. Check alignment of cardboard foundation at front listing pocket as shown in illustration. Foundation must be at front of listing pocket as shown.
 - b. Center listing and foundation on center of front bow.
 - c. Secure listing in place with staples or tacks spaced about two (2) inches apart. Distance from end of foundation to center of dielectric seam should be about 2-1/2 inches as shown in View "A", Figure 8-92.
14. With top several inches off windshield header, position and secure hold-down cables at front (Fig. 8-85). Position bracket by inserting tab and secure bracket with screw, then secure metal tab. Also attach hold-down cable to front bow and side roof rail rear (View "U" and "W", Fig. 8-85).
 15. Align and secure top cover at front roof rail as follows:
 - a. Raise top and lock to windshield header.
 - b. With aid of helper, pull top cover forward and down to remove wrinkles and irregularities. Mark reference of front edge of front roof rail on top cover.
 - c. Unlock front roof rail and apply cement to underside of front roof rail and top cover. This includes tacking strip and both corners (Fig. 8-84).

NOTE: For best results of top installation and appearance, step 15d should be done in conjunction with step 16 before securing either permanently.
 - d. Secure top cover to front roof rail according to reference marks above, and check appearance of top cover by locking top to windshield header. Adjust top cover by drawing material forward and/or laterally as required for proper alignment and appearance, and secure with cement. Front corner retainers (flaps) secure only to front roof rail.
 16. With top locked to windshield header, cement, align and secure upper areas of quarter retainers (flaps) to side roof outer rear rails. Recheck alignment of top cover and align quarter retainer seams with edges of side roof rear rails. Remove all fullness from rear of top cover (Fig. 8-87). A forward draw on cover outer sides will aid this operation. Align quarter retainers to each rear rail and cement securely in place. Top cover

binding at quarter retainers should not curl away from rear rail.

17. Lower top and secure top cover to front roof rail trimstick with staples or tacks spaced about two inches apart. Remove excess top material along rear of trimstick.
18. Using weatherstrip adhesive at outer ends, position and secure rear weatherstrip on front roof rail. Use outer attaching screw holes for locating purposes (Fig. 8-84).
19. Position, secure and seal front roof rail front weatherstrip (Fig. 8-84). Front weatherstrip must be properly positioned and sealed as shown in illustration.
20. Install and align side roof rail rear weatherstrips. Adjust rear weatherstrips forward for butt fit when top is locked at windshield header. After tightening upper two screws, lower top part way to tighten lower screw.

NOTE: Side roof rail front weatherstrips are not designed to be adjusted "fore or aft". For improved contact at upper front corners, reposition windshield pillar weatherstrips upward.

21. Remove all protective covers and clean up.

FOLDING TOP COVER (LESS BACK CURTAIN)

Removal

NOTE: Before removal operations are started, check and specifically note alignment of top cover. Conditions such as wrinkles, draws, excess material, etc., can be corrected by adjusting trim material during assembly operations.

1. Apply protective covers to car as follows:
 - a. On rear deck section of car, particularly area adjacent to quarter belt finishing moldings, apply heavy padded cover to protect moldings and paint finish. Mask securely in place.
 - b. On interior trim, floor and hood, use conventional covers.
2. With top lowered, detach top cover at front roof rail as follows (Fig. 8-84):
 - a. Remove front roof rail front weatherstrip.

- b. Detach front roof rail rear weatherstrip at outer ends.
- c. Detach top cover from front roof rail (Fig. 8-84).
- d. With top a short distance above windshield header, remove attaching screws, unbend metal tabs, and detach hold-down cables at front (Fig. 8-85).
- e. Detach hold-down cable from front bow and side roof rail rear (View "U" and "W", Fig. 8-85).

WARNING: CONTROL LINKS ARE UNDER SPRING TENSION AND MUST BE DETACHED WITH CARE TO AVOID PERSONAL INJURY AND/OR DAMAGE TO TRIM MATERIAL. FOR DETACHMENT INSTRUCTIONS SEE "BACK WINDOW GUIDE CONTROL LINK AND SPRING REMOVAL AND INSTALLATION" (FIG. 8-99).

3. With top raised, detach guide control links from lower corners of back window, slip compartment bag over links and lay links on floor.
4. With top lowered halfway, remove side roof rail rear weatherstrips. Mark reference locations of quarter retainers on side rails (Fig. 8-87) and detach cemented retainers from side rails.
5. Detach center bow, rear trimstick and rear gutter assemblies for raising above body beltline as follows:
 - a. With front roof rail several inches above windshield header, remove lower rear bolt (Item "B", Fig. 8-88) securing trimstick to main hinge on each side. Bolt is removable toward inside of body. Welded anchor nut remains on trimstick.
 - b. In rear compartment, detach gutter retaining rod from attaching clips. Use care to prevent puncturing or tearing gutter during detachment. A total of five attaching clips are located as follows: one on each side of rear compartment lid hinges and one at rear center. Then detach each end of retaining rod from body by moving rod rearward.
 - c. With top lowered about halfway, remove front bolt and nut on each side (Item "A", Fig. 8-88) securing center bow assembly to main hinge. Bolt enters through bushing and threads into main hinge. Bolt is then secured with lock nut. Bushing is retained in outer rail and contacts main hinge.
6. Lift rear trimstick, center bow and gutter assemblies from body as follows:
 - a. On one side of body, spring trimstick, center bow and gutter assembly inward. Check and position gutter retaining rod and trimstick to assure that they are clear for removal.
 - b. Lift trimstick, center bow and gutter assembly upward and forward.
 - c. Duplicate lifting operation on opposite side of body, and position center bow, rear trimstick and gutter assembly on protected rear deck of car.
7. With suitable marking tool, such as pointed felt tipped pen, or tailor's chalk, accurately mark reference lines on top trim material as follows:
 - a. Vertical edge references of top cover on back curtain at trimstick (Item "A", Fig. 8-85).
 - b. Lower edge of trimstick on top cover. Press on trim material to determine accurate position of trimstick before marking (Item "B", Fig. 8-85).
 - c. Reference mark at two inch intervals along centerline of trimstick on top cover. Remove staple or tack which may be at reference location.
 - d. Using a quarter inch drill bit, drill hole at each reference location (Fig. 8-85).
8. With staple removing tool, such as narrow screwdriver, detach both sides of top cover from trimstick.
9. Pull top cover upward and detach hold-down cable rear spring from each side of trimstick (View "Y", Fig. 8-85).
10. Remove hold-down cables from listing pockets by pulling springs through listing pockets.
11. Unzip top cover from back cover (View "C", Fig. 8-92).
12. Turn rear of top cover forward for access to rear

NOTE: In some cases, access to bolt may require some deflection of quarter upper rear sealing strip which is metal reinforced and can be restored to proper alignment. Avoid losing nut or bolt behind trim by blocking adjacent openings with shop towels.

listing. Detach rear listing from center bow (View "B", Fig. 8-92).

13. Turn front of top cover rearward for access to front listing. Detach front listing from front roof bow (View "A", Fig. 8-92) and remove top cover.

Installation

1. Since original top cover is being replaced, carefully and uniformly cut off bottom of original top cover along trimstick lower reference mark (Item "B", Fig. 8-85).
2. Place new top cover flat on clean surface with inner surface down. Position original top cover over new one and reference mark as follows (Fig. 8-85).
 - a. Carefully align top cover sides.
 - b. Align back window opening upper corners.
 - c. Align rear quarter upper corners.
 - d. With both covers in alignment, transfer trimstick references, right and left, to bottom of new top cover by marking along cut bottom edges (Item "B", Fig. 8-85).
 - e. Transfer locations of drilled holes along bottom.
3. Fold replacement top cover in half as shown in Figure 8-93. Determine precise centerline of top cover and carefully mark center of top cover on listings for front and center bows.
4. Transfer cardboard foundations from original top cover, or install replacement foundations in front and rear listing pockets as shown in Figure 8-92.
5. Insert hold-down cables in top cover. Use a length of welding rod to facilitate insertion (Fig. 8-85).
6. Position center of top cover rear listing on center bow and staple or tack in place. Space fasteners about two inches apart (View "B", Fig. 8-92).
7. Zip top cover to back curtain.
8. With aid of helper, install top cover as follows:
 - a. Align top cover at rear vertical reference mark and at trimstick horizontal reference. With helper holding trim in aligned position, double tack or staple at this location using 12 ounce tacks or equivalent staples.

NOTE: Original top covers are stretched to a degree upon installation. Replacement top covers are not stretched. During installation, allow for uniform stretch in new cover for proper final appearance.

- b. Apply trim cement to lower area of side roof rear rail and to top cover quarter retainer (flap). Center top (laterally) by aligning horizontal reference on each side at trimstick. Secure quarter retainer (flap) and seam at bottom. Also, double staple or tack top cover at front of trimstick (Fig. 8-87 and View "Z", Fig. 8-85) using 12 ounce tacks or equivalent staples.
- c. Align top cover horizontal reference at center (in accordance with steps a and b above) and staple or tack in place. Work forward and rearward from center. Keep material in alignment and flat. Space staples or tacks about two inches apart.
- d. Trim off excess material beyond 1/2 inch overhang (Fig. 8-85).

NOTE: If diagnosis prior to top cover removal revealed particular conditions (such as loose material, etc.), the conditions can be corrected by adjusting top cover on trimstick in steps a, b and c above.

9. Position rear trimstick, center bow and gutter assembly into body in reverse order of removal. With top half lowered, start one end of trimstick and gutter into body, then position opposite end into body.
10. Secure trimstick, center bow and gutter assembly to body as follows:
 - a. Manually raise top to up position. Secure back window guide control links. For attachment of control links, see "Back Window Guide Control Link - Removal and Installation" (Fig. 8-99).
 - b. Raise top several inches above windshield header. Install bushing in main hinge, align trimstick to main hinge attaching holes and install trimstick attaching bolts (View "B", Fig. 8-88). Use care to avoid dropping bolt. To avoid losing bolt, block openings at wheelhouse with several shop towels.
 - c. Lower top halfway. With bushing properly positioned in each outer rail, install attaching

bolts (View "A", Fig. 8-88) securing outer rail to main hinge. Each bolt threads into hinge and is secured with lock nut.

- d. Secure gutter retaining rod to five clips on body (Fig. 8-94). Clips are located as follows: one on each side of rear compartment lid hinge and one at rear center.
11. Secure top cover front listing to front roof bow as follows (Fig. 8-92):
 - a. Check alignment of cardboard foundation at front listing pocket as shown in illustration. Foundation must be at front of listing pocket as shown.
 - b. Center listing and foundation on center of front bow.
 - c. Secure listing in place with staples or tacks spaced about two inches apart. Distance from end of foundation to center of dielectric seam should be about 2-1/2 inches as shown in View "A", Figure 8-92.
12. With top several inches off windshield header, position and secure hold-down cables at front (Fig. 8-85). Position bracket by inserting tab and secure bracket with screw. Then secure hold-down cables to front bow and side roof rail rear (View "U" and "W", Fig. 8-85).
13. Align and secure top cover at front roof rail as follows:
 - a. Raise top and lock to windshield header.
 - b. With aid of helper, pull top cover forward and down to remove wrinkles and irregularities. Mark reference of front edge of front roof rail on top cover.
 - c. Unlock and raise front roof rail. Apply trim cement to attaching surfaces at front on top cover and on front roof rail. This includes surfaces of trimstick and both outer corners for retainers (Fig. 8-84).

NOTE: For best results of top installation and appearance, step 13d should be done in conjunction with step 14 before securing either permanently.

- d. Secure top cover to front roof rail according to reference marks above, and check appearance of top cover by locking top to windshield header. Adjust top cover by drawing material forward and/or laterally as required for proper alignment and appearance and se-

cure with cement. Front corner retainers (flaps) secure only to front roof rail.

14. With top locked to windshield header, cement, align and secure upper areas of quarter retainers (flaps) to side roof outer rear rails. Recheck alignment of top cover over center bow and align quarter retainer seams with edges of side roof rear rails. Remove all fullness from rear of top cover (Fig. 8-87). A forward draw on cover outer sides will aid this operation. Align quarter retainers to each rear rail and cement securely in place. Top cover binding at quarter retainers should not curl away from rear rail.
15. Lower top and secure top cover to front roof rail trimstick with staples or tacks spaced about two inches apart. Remove excess top material along rear of trimstick.
16. Using weatherstrip adhesive at outer ends, position and secure front roof rail rear weatherstrip. Use outer attaching screw holes for locating purposes (Fig. 8-84).
17. Position, secure and seal front roof rail front weatherstrip (Fig. 8-84). Front weatherstrip must be properly positioned and sealed as shown in illustration.
18. Install and align side roof rail rear weatherstrips. Adjust rear weatherstrips forward for butt fit when top is locked at windshield header. After tightening upper one or two screws, lower top part way to tighten lower screw.

NOTE: The side roof rail front weatherstrips are not designed to be adjusted "fore or aft". For improved contact at upper front corners, reposition windshield pillar weatherstrip upward.

19. Remove protective covers, shop towels, if used, and clean up.

BACK CURTAIN ASSEMBLY (LESS TOP COVER)

Removal

NOTE: Before removal operations are started, check and specifically note alignment condition of back curtain. Conditions such as wrinkles, draws, excess material, etc., can be corrected by adjusting trim material during assembly operations.

1. Apply protective covers to car as follows:
 - a. On rear deck section of car, particularly area adjacent to quarter belt finishing moldings,

apply heavy padded cover to protect moldings and paint finish. Mask securely in place.

- b. On interior trim and floor, use conventional covers.

WARNING: CONTROL LINKS ARE UNDER SPRING TENSION AND MUST BE DETACHED WITH CARE TO AVOID PERSONAL INJURY AND/OR DAMAGE TO TRIM MATERIAL. FOR DETACHMENT INSTRUCTIONS SEE "BACK WINDOW GUIDE CONTROL LINK AND SPRING - REMOVAL AND INSTALLATION" (FIG. 8-99).

2. With top raised, detach guide control links from lower corners of back window, slip compartment bag over links and lay links on floor.
3. With top lowered halfway, remove side roof rail rear weatherstrips. Mark reference locations of quarter retainers on side rails (Fig. 8-87) and detach cemented retainers from side rails.
4. Prepare center bow, rear trimstick and rear gutter assemblies for lifting above body beltline as follows:
 - a. With front roof rail several inches above windshield header, remove lower rear bolt (View "B", Fig. 8-88) securing trimstick to main hinge on each side. Bolt is removable toward inside of body. Welded anchor nut remains on trimstick.
 - b. In rear compartment, detach gutter retaining rod from attaching clips. Use care to prevent puncturing or tearing gutter during detachment. A total of five attaching clips are located as follows: one on each side of rear compartment lid hinges and one at rear center. Then detach each end of retaining rod from body by moving rod rearward.
 - c. With top lowered about halfway, remove front bolt and nut on each side (View "A", Fig. 8-88) securing center bow assembly to main hinge. Bolt enters through bushing and threads into main hinge. Bolt is then secured with lock nut. Bushing is retained in outer rail and contacts main hinge.

NOTE: In some cases, access to bolt may require some deflection of quarter upper rear sealing strip which is metal reinforced and can be restored to proper alignment. Avoid losing nut or bolt behind trim by blocking adjacent openings with shop towels.

5. Lift rear trimstick, center bow and gutter assemblies from body as follows:
 - a. On one side of body, spring trimstick, center bow and gutter assembly inward. Check and position gutter retaining rod and trimstick to assure that they are clear for removal.
 - b. Lift trimstick, center bow and gutter assembly forward and upward.
 - c. Duplicate lifting operation on opposite side of body and position center bow, rear trimstick and gutter assembly on protected rear deck of car.
6. With suitable marking tool, such as pointed felt tipped pen or tailor's chalk, accurately mark reference lines on top trim material as follows:
 - a. Vertical edge references of top cover on back curtain at trimstick (Item "A", Fig. 8-85).
 - b. Lower edge of trimstick on top cover. Press on trim material to determine accurate position of trimstick before marking (Item "B", Fig. 8-85).
 - c. Center mark on trimstick and on back curtain (Item "C", Fig. 8-85).
 - d. Reference mark at two inch intervals along center of trimstick on top cover and back curtain. Remove staple or tack, which may be present at reference location.
 - e. Using a quarter inch drill bit, drill hole at each reference location.
7. With staple removing tool, such as narrow screwdriver, detach both sides of top cover from trimstick. Pull top cover upward, and complete marking lower edge reference of trimstick on back curtain (Fig. 8-91).
8. Unzip back curtain from top cover (View "C", Fig. 8-92).
9. Lift top cover upward and detach hold-down cable rear spring from each side of trimstick (Fig. 8-85) also detach hold-down cable from side roof rail rear (View "W", Fig. 8-85).
10. Detach top cover rear listing from center bow. Turn rear of top cover forward for access to rear listing (View "B", Fig. 8-91).
11. Detach and remove back curtain assembly as follows:

- a. Detach side quarter foam pad from back curtain extension up to center bow (Fig. 8-86). If pad(s) are damaged during removal, replace them with equivalent soft, foam rubber material. Use sharp blade, like razor, and carefully cut cemented bond while gently lifting foam pad.
- b. Mark center on back curtain and on adjacent parts as follows:
 1. At top - on back curtain extension and on center roof bow (View "A", Fig. 8-86).
 2. At bottom - on back curtain lower inner valance and on gutter material at trimstick (View "C", Fig. 8-85).
- c. Detach back curtain from rear trimstick. Note how folded material is secured below back window sides (View "D", Fig. 8-85).
- d. Detach back curtain extension from center bow and remove back curtain assembly.

Installation

1. Since original back curtain is being replaced, carefully and uniformly cut away bottom of original back curtain along rear trimstick lower reference marks (Figs. 8-85 and 8-91).
 2. Transfer reference markings from original back curtain to replacement back curtain as follows:
 - a. Lay new back curtain flat on clean surface with inside face down. Position original back curtain over new one matching corners of back window openings. Carefully position trim material flat in all directions.
 - b. With back window openings in alignment, accurately transfer trimstick reference to bottom of new back curtain by following along lower cut valance of original back curtain. Use a suitably pointed and legible marking pencil or tailor's chalk. (Item "B", Figs. 8-85 and 8-91).
 - c. Transfer center reference mark from original back curtain to new one at top (on extension) and at bottom (on valance) (Item "C", Fig. 8-85).
 - d. Transfer top cover vertical edge reference from original back curtain to new one (Item "A", Fig. 8-85).
 - e. Transfer location of drilled holes from original back curtain to replacement back curtain. Then punch reference holes in new back curtain.
 3. Install back curtain as follows:
 - a. Position center of new back curtain extension on center of center bow. Front edge of extension should be flush with front rib of center bow. Staple or tack extension to center bow. Start at center, keep trim material flat, and space tacks or staples about two inches apart (Fig. 8-86).
 - b. With aid of helper, align bottom center of back curtain with center of trimstick. At same time, carefully align horizontal, lower edge reference mark at lower edge of trimstick (Fig. 8-85). Also align punched holes in back curtain with holes in top cover and trimstick.
- NOTE:** Original back curtains are stretched to a degree upon installation. Replacement back curtains are not stretched. During this operation, allow for uniform stretch in material by adjusting horizontal reference for proper final appearance.
- c. Working from center, staple or tack back curtain to trimstick. Maintain alignment of reference mark at trimstick, and keep material flat to trimstick between fasteners.
 - d. Fold back each side of curtain, shown in View "D", Figure 8-86, and install three staples or tacks at this location.
 - e. Space staples or tacks about two inches apart (about 40 tacks or staples). Avoid excessive stretching of material.
 - f. Allow 1/2 inch of back curtain to overhang rear trimstick. Using scissors, cut off excess material beyond 1/2 inch overhang (Fig. 8-85).
4. Cement original or replacement side quarter (foam) pad (Fig. 8-86) between center bow and rear bow on each side. If pad(s) from center to rear bow were damaged upon removal, replace them with equivalent foam rubber material.
 5. Position center of top cover listing on center of center bow and staple or tack in place. Space fasteners about two inches apart (Fig. 8-92).
 6. Attach hold-down cable rear spring (Fig. 8-85) to each side of trimstick (View "Y", Fig. 8-85).

7. With aid of helper, complete installation of top cover as follows:

- a. Zip top cover to back curtain (View "C", Fig. 8-92).
- b. Align top cover at rear vertical reference marks and at trimstick drilled hole references (Items "A" and "B", Fig. 8-85). With helper holding trim in aligned position, double tack or staple at this location using 12 ounce tacks or equivalent staples.
- c. Apply trim cement to lower area of side roof rear rail and to top cover quarter retainer (flap). Center top (laterally) by aligning horizontal reference on each side at trimstick. Secure quarter retainer (flap) at lower area. Also, double staple or tack top cover at front of trimstick (Fig. 8-87 and View "Z", Fig. 8-85) using 12 ounce tacks or equivalent staples.
- d. Align top cover horizontal reference at center (in accordance with steps a and b above), with drilled holes and staple or tack in place. Work forward and rearward from center. Keep material in alignment and flat. Avoid stretching. Space staples or tacks about two inches apart.
- e. Trim off excess material beyond 1/2 inch overhang (Fig. 8-85).

NOTE: If diagnosis prior to top cover removal revealed particular conditions (such as loose material, etc.), the conditions can be corrected by adjusting top cover on trimstick at this time.

8. Position rear trimstick, gutter, and center bow assembly into body in reverse order of removal. With top half lowered, start one end of trimstick and gutter into body, then position opposite end into body.
9. Secure trimstick, gutter and center bow assembly to body as follows:
 - a. Manually raise top to up position. Secure back window guide control links. For attachment of control links, see "Back Window Guide Control Link - Removal and Installation" (Fig. 8-99).
 - b. Raise top several inches above windshield header. Install bushing in main hinge, align trimstick to main hinge attaching holes, and install trimstick attaching bolts (View "B", Fig. 8-88). Use caution to avoid dropping

bolt. To avoid losing bolt, block openings at wheelhouse with several shop towels.

- c. Lower top halfway. With bushing properly positioned in each outer rail, install attaching bolts (View "A", Fig. 8-88) securing outer rail to main hinge. Each bolt threads into hinge and is secured with lock nut.
- d. Secure gutter retaining rod to five clips on body (Fig. 8-94). Clips are located as follows: one clip on each side of each rear compartment lid hinge and one clip at rear center.
10. With top locked to windshield header, cement, align and secure upper attaching surfaces of quarter retainers (flaps) to side roof outer rear rails. Align quarter retainer seams with edges of side roof outer rear rails to remove all fullness from rear of top cover (Fig. 8-87). A forward draw on cover outer sides will aid this operation. Top cover binding along rear rails should not curl away from rails.
11. Install and align side roof rail rear weatherstrips. Adjust rear weatherstrips forward for butt fit when top is locked at windshield header. After tightening upper one or two screws, lower top part way to tighten lower screw.

NOTE: Side roof rail front weatherstrips are not designed to be adjusted "fore or aft". For improved contact at upper front corners, position windshield pillar weatherstrips upward.

12. Remove protective covers and clean up.

FOLDING TOP SIDE QUARTER PAD ASSEMBLY

A right and a left side quarter (stay) pad assembly (Fig. 8-86) secures to the front roof rail and to the center bow assembly. The pad assemblies do not secure to the front roof bow. Pad assemblies consist of strong webbing material, a cloth cover, and soft foam padding approximately 1/4 inch thick. The rear end of the pad assemblies is reinforced with 12 ounce tacks. Additionally, the rear assemblies are secured with staples at the rear. Pad assemblies are secured at the front with attaching screws. Access for removal and installation of a side quarter pad assembly requires detaching the top cover across the front roof rail, the listing at the front roof bow and the back curtain extension at the side.

Removal

1. Apply protective covers as required to interior

trim, hood and rear deck of car.

2. With top lowered, detach following from front roof rail:
 - a. Front roof rail front weatherstrip (complete), Figure 8- 84.
 - b. Front roof rail rear weatherstrip (at outer ends).
 - c. Top Cover.

NOTE: Before detaching top cover, reference mark complete front edge of front roof rail on top cover.

3. Raise top and lift several inches above windshield header. Detach hold-down cables at front (Fig. 8-85).
4. Turn front of top cover rearward and detach top cover front listing from front roof bow (Fig. 8-92).
5. Using scissors or equivalent tool, make lateral cut through side quarter (foam) pad in line with center bow. Foam pad is cut for access to back curtain extension attachment. Detach back curtain extension from center roof bow where extension overlaps side quarter pad assembly (Fig. 8-86).
6. Reference mark inner and outer edges of pad assembly on front roof rail and on center bow. Remove attaching screws securing pad assembly at front roof rail (Fig. 8-86).
7. Detach cemented cover of pad assembly (cemented at front, rear and outer edges) and carefully detach side quarter (foam) pad from webbing.
8. Detach side quarter pad assembly from center bow by removing staples and tacks, and remove pad assembly.

Installation

1. Install side quarter (stay) pad assembly as follows:
 - a. With top locked at windshield header, and top cover pulled away for access, position pad assembly at center bow reference marks as determined and marked in step 6 above. With pad cover raised, secure webbing to center bow with nine equally spaced staples. Align rear of pad flush with rear of center bow tacking strip.

- b. Position and install six 12 ounce reinforcement tacks to secure other rear of webbing at center bow (Fig. 8-86).

- c. With aid of helper, tighten the webbing by pulling forward, align webbing with reference marks at front roof rail and install inner four attaching screws (Fig. 8-86). Remove excess webbing at front roof rail trim line. Make opening in webbing for hold-down cable metal tab and for attaching screw.

2. Complete side quarter pad assembly build-up as follows:

- a. With top several inches above windshield header, secure back curtain extension to center bow (Fig. 8-86). Space staples or tacks about two inches apart.

- b. Lock top at front. Using trim cement sparingly, position and secure (foam) pad to side quarter webbing (Fig. 8-86). Make butt joint between foam pad on webbing and on back curtain extension. Secure butt joint with length of two inch cloth-back body sealing tape.

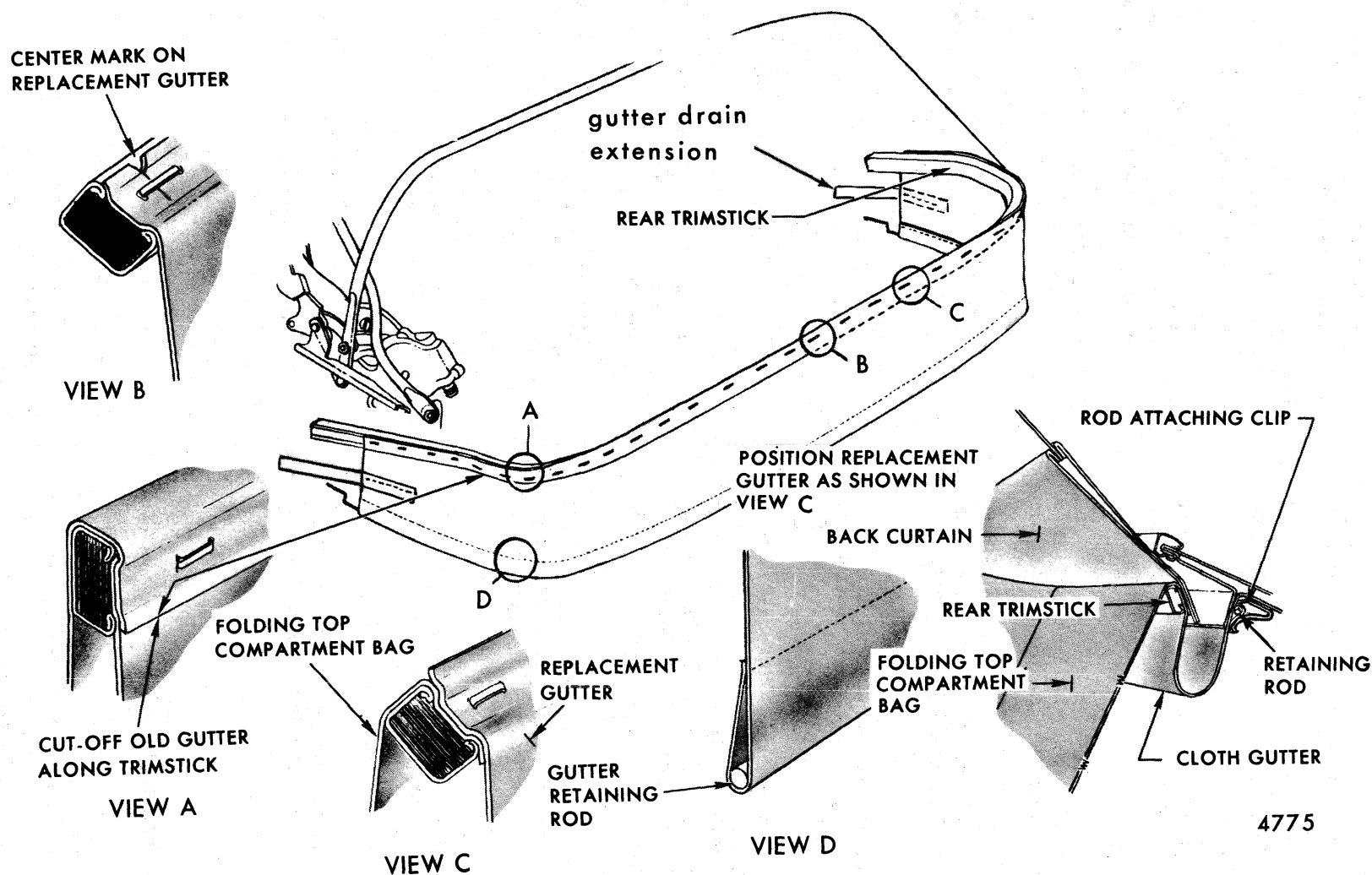
- c. Using trim cement sparingly around edges, position and secure cover of side quarter pad assembly.

3. Position and secure top cover front listing to front roof bow (Fig. 8-92). For further information see "Top Cover - Installation".
4. With top several inches above windshield header, position side quarter pad assembly at outer front corner and secure hold-down cable at front (Fig. 8-85).
5. Align and secure top cover to front roof rail (Fig. 8-84). See "Top Cover - Installation".
6. Install front roof rail front and rear weatherstrips (Fig. 8- 84).
7. Remove protective covers and clean up as required.

FOLDING TOP GUTTER

The inward folding top rear gutter is constructed of convertible top trim material. The front of the gutter secures to the rear trimstick. The rear of the gutter secures to the body by means of a retaining rod and five attaching clips (Fig. 8-94). The clips are located as follows: one clip on each side of each rear compartment lid hinge, and one clip at the rear center.

Fig. 8-94-Inward Folding Top Gutter Attachment



Removal and Installation

1. Detach back curtain assembly along bottom as described in "Back Curtain (Less Top Cover) - Removal and Installation" (Fig. 8-86).
2. Remove original gutter by cutting along rear trimstick. Use care during original gutter removal not to cut folding top compartment bag (Fig. 8-94).
3. Determine and mark center on replacement gutter by folding gutter in half.
4. Transfer retaining rod from original to replacement gutter as shown in Figure 8-94. This operation can be done after securing gutter to trimstick.
5. Position center of replacement gutter over folding top compartment bag on center of trimstick and staple or tack in place (View "C", Fig. 8-94). Start at center and work to each side. Space staples or tacks about four inches apart.
6. Install back curtain and top cover assemblies as described in "Back Curtain (Less Top Cover) - Removal and Installation".

FOLDING TOP HARDWARE COMPONENTS

FRONT ROOF RAIL LOCK

CAUTION: A safeguard has been built into the front roof rail lock to prevent moving the lock handle to the closed position when the top is unlocked. Lowering a top with the lock handle in the closed or locked position causes breakage of the handle. The safeguard consists of a stop to prevent rotating the handle from the open to the closed position unless the lock hook is engaged. Do not attempt to force the lock handle past the stop. However, if the lock handle is forced past the stop onto the cam attached to the side rail, movement of the top toward a stacked position will cause the lock handle to slip off the cam into the open position.

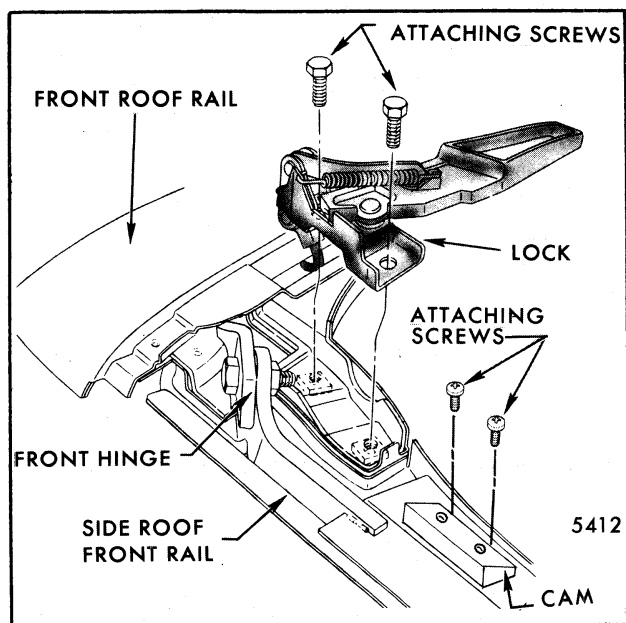


Fig. 8-95-Front Roof Rail Lock Attachment

Removal and Installation

1. Manually unlock and support front roof rail several inches above windshield header.
2. With lock handle in open position as shown in Figure 8-95, detach spring, remove lock attaching screws and remove lock.
3. To install, reverse removal operations. Check operation of locks. Always lock left side of top before locking right side.

FRONT ROOF RAIL LOCATING PIN

A locating pin, of plastic construction, secures to the front of each side roof front rail by an attaching screw (Fig. 8-96).

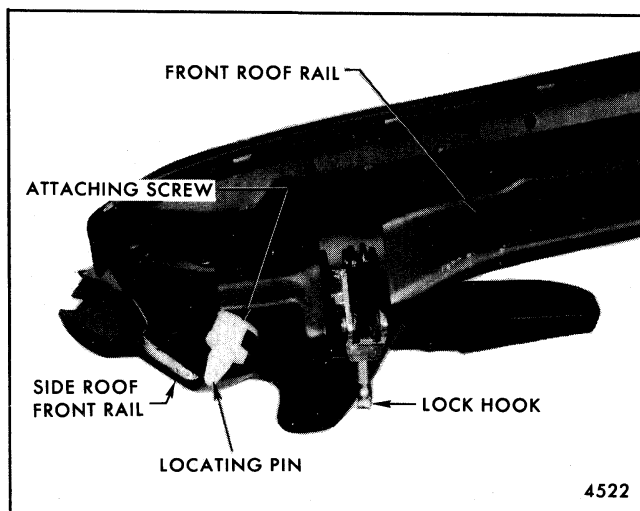


Fig. 8-96-Front Roof Rail Locating Pin

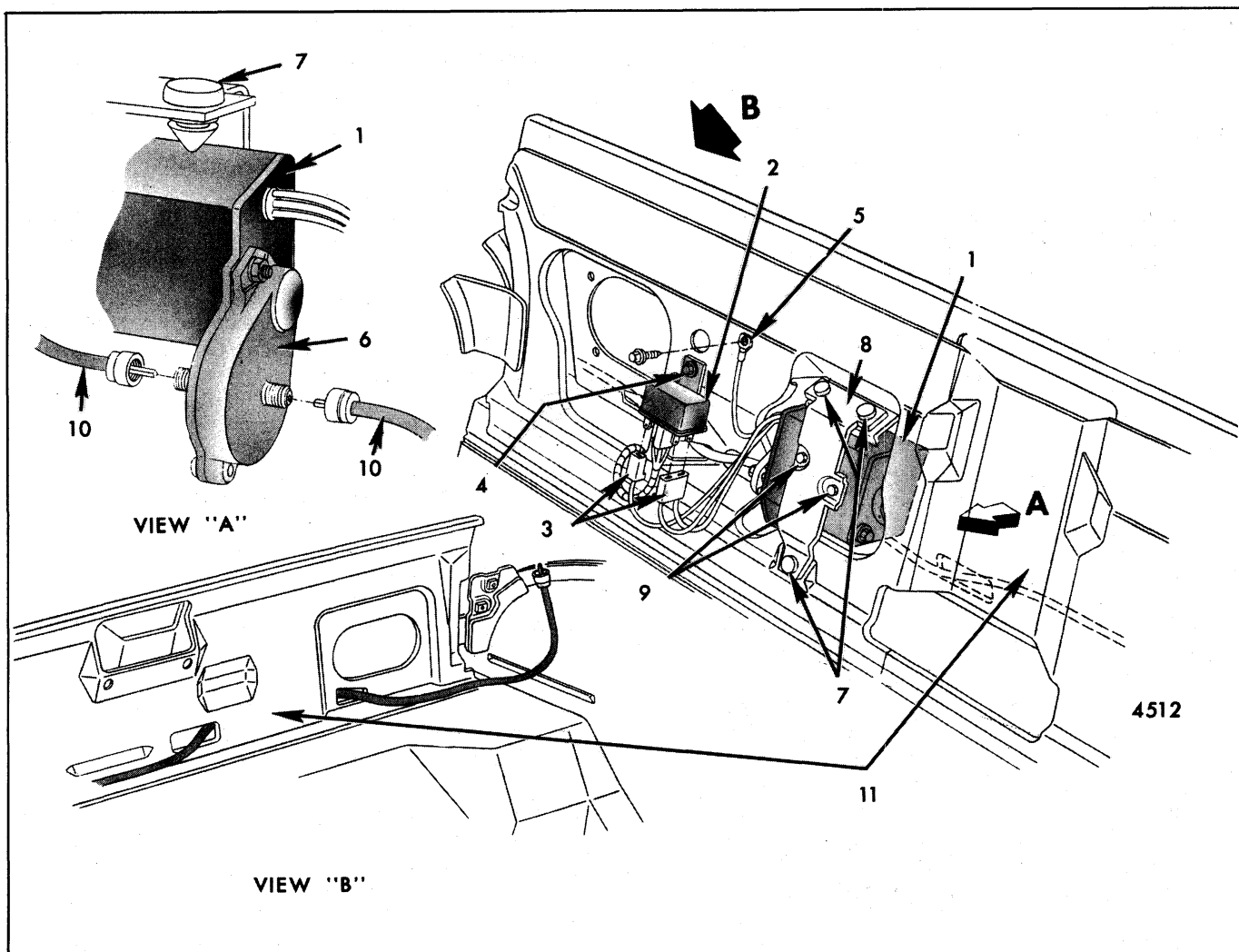


Fig. 8-97-Folding Top Electric Motor and Relay

- | | | | |
|------------------------------|------------------------------------|----------------------------------|--------------------------|
| 1. Electric Motor | 4. Relay Attaching Screw | 6. Electric Motor Reduction Unit | 9. Motor Attaching Screw |
| 2. Relay | 5. Motor Ground to Seat Back Panel | 7. Rubber Grommet(s) | 10. Drive Cable |
| 3. Electric Motor Connectors | | 8. Motor Support | 11. Seat Back Panel |

Removal and Installation

1. Lower top part way or completely.
2. Remove attaching screw and remove locating pin (Fig. 8-96).
3. To install, position locating pin on side roof front rail and install attaching screw.
4. Raise and lock top at windshield header.

FOLDING TOP ELECTRIC MOTOR AND/OR RELAY

The folding top electric motor and relay are secured

to the rear seat back panel and are accessible in the rear seat area (Fig. 8-97).

Removal and Installation

1. Remove rear seat cushion and rear seat back.
2. Detach drive cables at each top actuator.
3. Detach electric motor connectors from relay (Fig. 8-97).
4. Detach relay attaching screw and remove relay.
5. Remove screw securing motor ground to rear seat back panel.

6. Detach rubber grommets securing motor support to rear seat back panel (Fig. 8-97).
7. Detach right and left drive cables from electric motor reduction unit (Fig. 8-97).
8. Remove two attaching screws securing motor support to motor and remove motor.
9. To install, reverse the removal operations. To ease installation of motor and attaching bracket, apply solvent (mineral spirits or equivalent) to grommets on motor bracket. Check operation of motor for proper ground before installing trim.

FOLDING TOP ACTUATOR DRIVE CABLE - Right and/or Left

Removal and Installation

1. Remove rear seat cushion and rear seat back.

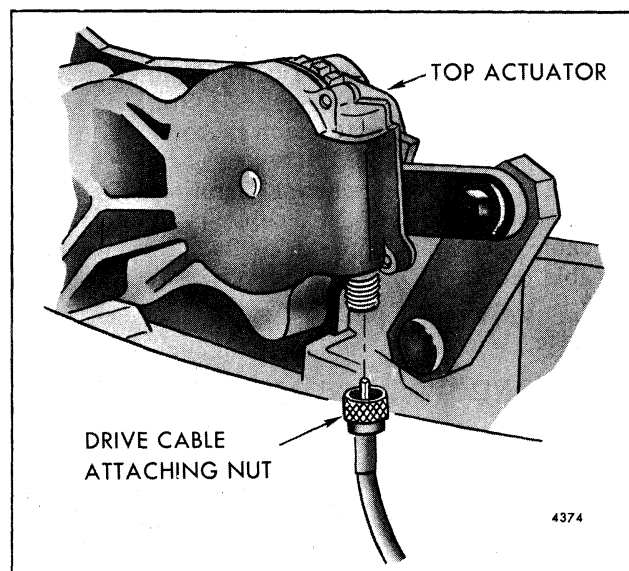


Fig. 8-98-Drive Cable to Top Actuator Attachment

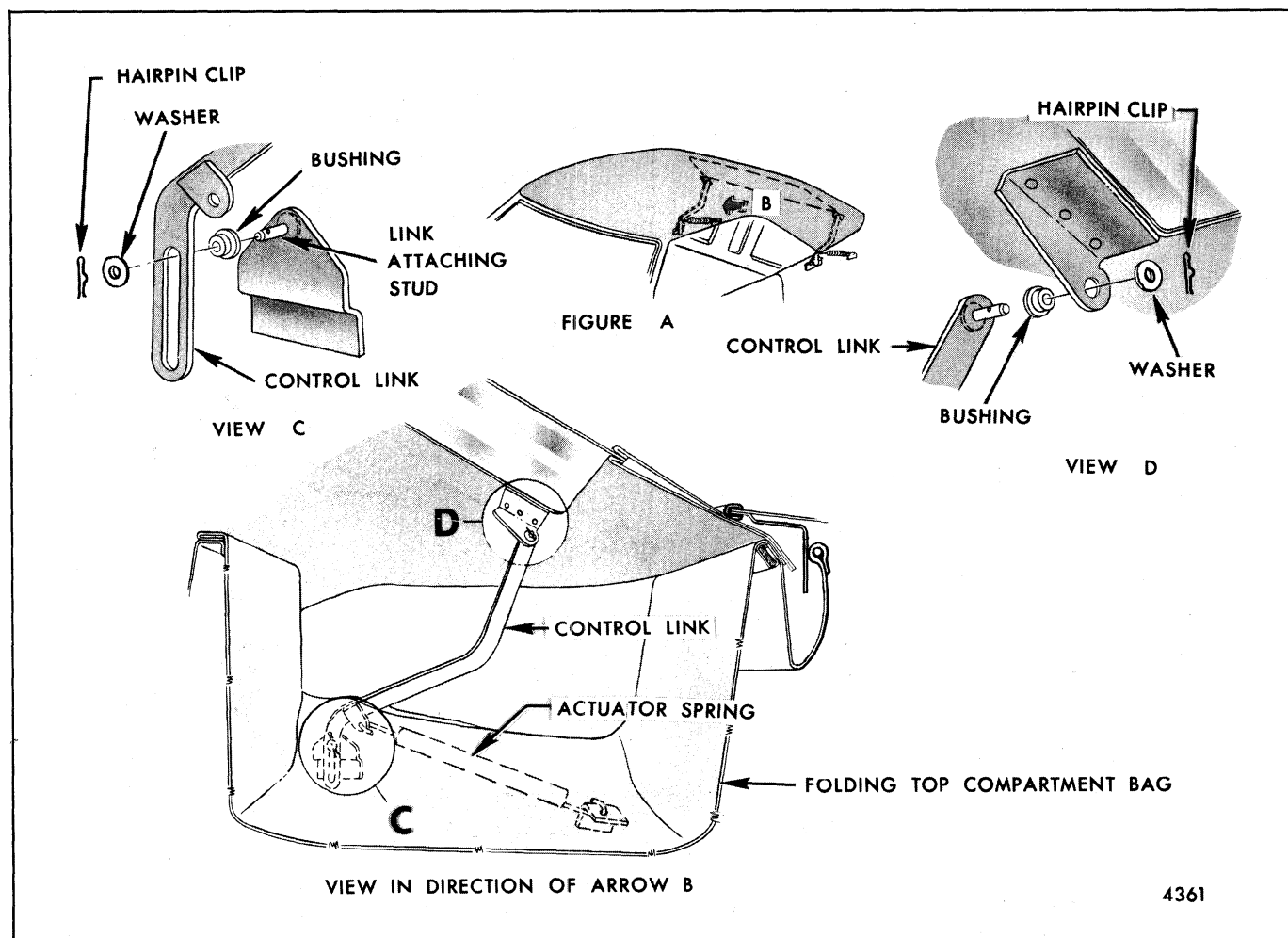


Fig. 8-99-Back Window Guide Control Link Attachment

2. Detach drive cable at top actuator assembly.
3. Detach right and/or left drive cable at electric motor reduction unit (Fig. 8-97). For removal of left drive cable, first detach motor.
4. To install, reverse removal operations. To facilitate engagement of drive cable, push and rotate cable opening on actuator by finger or with suitable tool.

BACK WINDOW GUIDE CONTROL LINK AND SPRING

The purpose of guide control links and springs at the back window is to guide the back window downward beyond the rear trimstick when lowering the inward folding top. As shown in Figure 8-99, the links and springs secure to attaching brackets at the back win-

dow and at the folding top compartment floor. The actuator springs are located under the folding top compartment bag. Inward folding tops must not be lowered if control links and/or actuator springs are disconnected for any reason.

Removal and Installation

1. With top in raised position, remove hairpin clip and washer from link attaching stud at back window.
2. Carefully lift control link, which is under spring tension, from attaching bracket. While carefully lowering control link, lift compartment bag over control link and lay control link on floor. Bushing need not be removed from stud unless necessary.
3. Through opening in compartment bag, detach

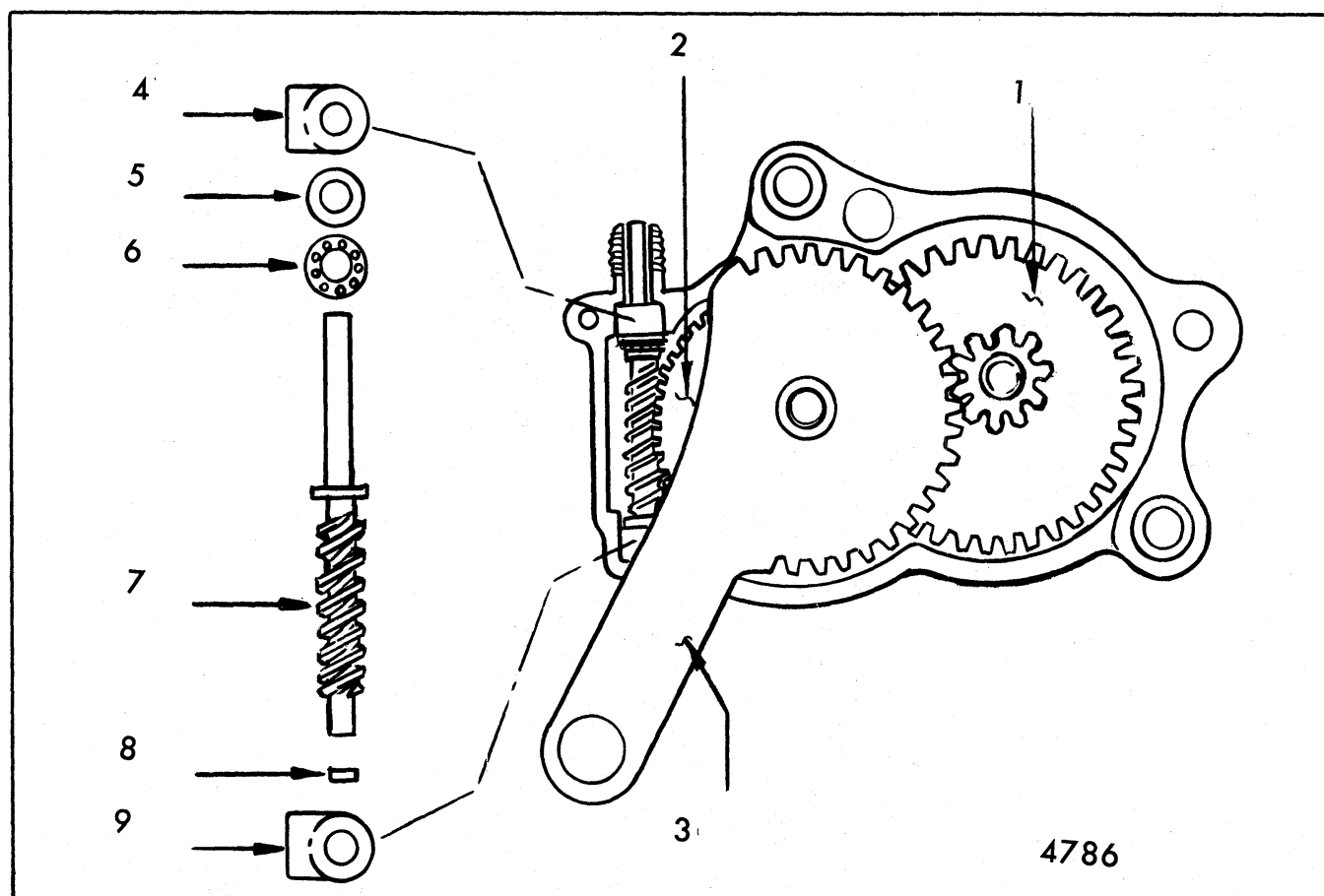


Fig. 8-100-Folding Top Actuator Components

- | | | |
|----------------------------------|-------------------------------|----------------------|
| 1. Gear and Pinion Assembly | 4. Front Worm Bearing | 7. Worm Gear |
| 2. Worm and Pinion Gear Assembly | 5. Washer | 8. Thrust Plug |
| 3. Sector Assembly | 6. Retainer and Ball Assembly | 9. Rear Worm Bearing |

and remove actuator spring, first from link, then from floor bracket.

4. Working through opening in compartment bag or through rear compartment, remove hairpin clip and washer from control link front attaching stud and remove control link.
5. To install, reverse removal operations.

FOLDING TOP ACTUATOR ASSEMBLY

A folding top actuator assembly is secured to each main hinge by three attaching screws (Fig. 8-101) and to the side rail system by a shoulder bolt. The shoulder bolt threads into the actuator link and is locked in place with a set screw. Actuator assemblies are operated by electrically powered drive cables.

Removal

Removal and installation of top actuators is easier with the top lowered. However, actuators can be replaced with the top raised.

1. Remove rear seat cushion and rear seat back.
2. Reposition bottom of main hinge cover panel on

side affected for access to attaching screws.

3. Disconnect drive cable from actuator assembly (Fig. 8-98).
4. Remove actuator attaching screws (Fig. 8-101).
5. Loosen set screw in side rail actuator link and remove shoulder bolt securing sector arm to actuator link.

Installation

1. Position top actuator assembly to main hinge and install in reverse order of removal. Finger start attaching screws on inner face of main hinge.
2. Align side rail actuator link with sector arm of actuator. Lubricate shoulder of attaching bolt with grease (Lubriplate or equivalent) and install bolt. Tighten set screw on side rail actuator link to lock attaching bolt.
3. Tighten attaching screws.
4. Synchronize actuators, check operation of top and install previously removed trim parts.

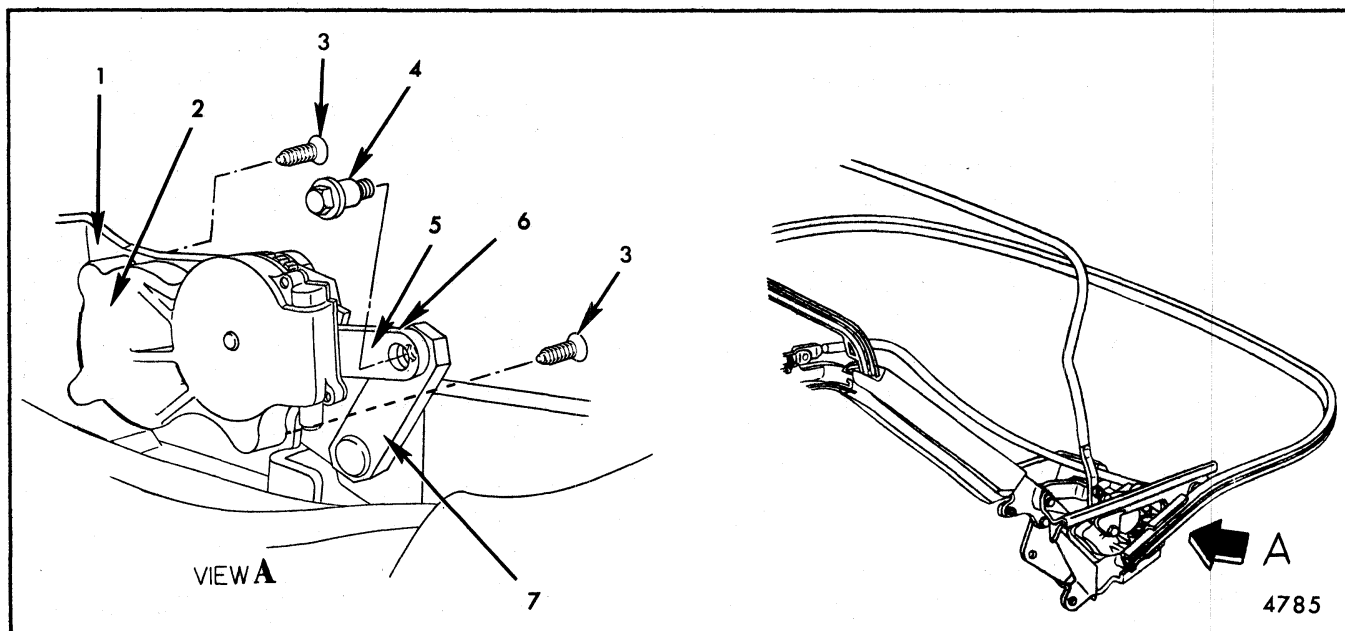


Fig. 8-101-Folding Top Actuator Attachment (View in Direction of Arrow "A")

- | | | | |
|--------------------------|--|------------------------------------|----------------------------|
| 1. Main Hinge | 3. Flat-head, Cross-recessed Attaching Screw | 4. Shoulder Bolt | 7. Side Rail Actuator Link |
| 2. Top Actuator Assembly | | 5. Actuator Sector Arm | |
| | | 6. Shoulder Bolt Locking Set Screw | |

PROCEDURE FOR SYNCHRONIZING FOLDING TOP ACTUATORS

Both folding top actuators must be synchronized or "in phase" for proper operation of the top. If synchronization is necessary due to removal or replacement of a folding top actuator, or for some other service operation, proceed as follows:

1. Raise top and lock at windshield header.
2. Disconnect drive cables at each top actuator (Fig. 8-98). Manually shake each side roof rail to stabilize in its proper position.
3. Connect drive cables to each top actuator. Actuators are now synchronized for proper operation of top. Check operation of top.

FOLDING TOP ADJUSTMENT

DESCRIPTION

Before performing any adjustments on the inward folding top, the technician should read and understand the complete adjustment section as covered in this section. Knowledge of the design, operation, attachment and adjustment sequence of component units is essential to the technician performing top alignment operations. Side roof rail assemblies are designed to provide three basic functions for the proper operation of the inward folding top.

1. The first function provides a lifting tension in the side rail system when the top is down or stacked. This tension is required to assist and coordinate the proper unfolding of the side roof rails when raising the top. The tension is achieved by an outward pull of the rear control link at the mounting plate.

The adjustment is controlled by the serrated bushing of the control link.

Improperly tensioned rear control links can cause binding and/or damage conditions to the rail system when raising the top.

2. The second function provides proper height and length to the side roof rails. Height of the side rails is important to side glass alignment. Length of the side rails positions the front roof rail locating pin with the striker in the windshield header.

The height and length adjustments are controlled simultaneously by the setting of the side roof rail set screw.

When side rails have mispositioned set screws, the windows cannot be aligned properly and locating pins cannot be aligned with the windshield header.

3. The third function provides a measurable outward force by the side rails which is necessary for proper weatherstrip contact and side rail rigidity. The outward force of each side rail is

adjustable and rests against the center bow stop on each side. The center bow assembly, consisting of the center bow and side roof outer rear rails, straddles the inward folding side roof rails.

Adjustment of the outward force is controlled by the fore-aft setting of the rear control link mounting plate.

Improper positioning of the rear control link mounting plate can cause corresponding folding top misalignment problems and/or, if over-adjusted, damage to folding top components.

FOLDING TOP STACKED POSITION TENSION ADJUSTMENT

The inward folding top, when down or stacked, must possess a degree of tension in the side rail system to assist and coordinate the proper unfolding of the right and left side rails when the top is raised.

Stacked or down position tension adjustment must be completed before side roof rail (up position) tension adjustment is attempted. Stack tension adjustment is not affected by side roof rail (up position) tension adjustment. However, side roof rail (up position) tension adjustment is affected by stack (or down position) adjustment. On a properly stacked top, the front roof rail is parallel to the beltline of the car, and allows for normal top boot installation.

To obtain proper folding top stack tension adjustment, proceed as follows:

1. Synchronize Folding Top Actuators - Refer to procedure for synchronizing folding top actuators. If synchronization does not correct stack height, correct stack tension adjustment by proceeding with following steps.
2. Lower top into folding top compartment.
3. Loosen top control link attaching nut (Item

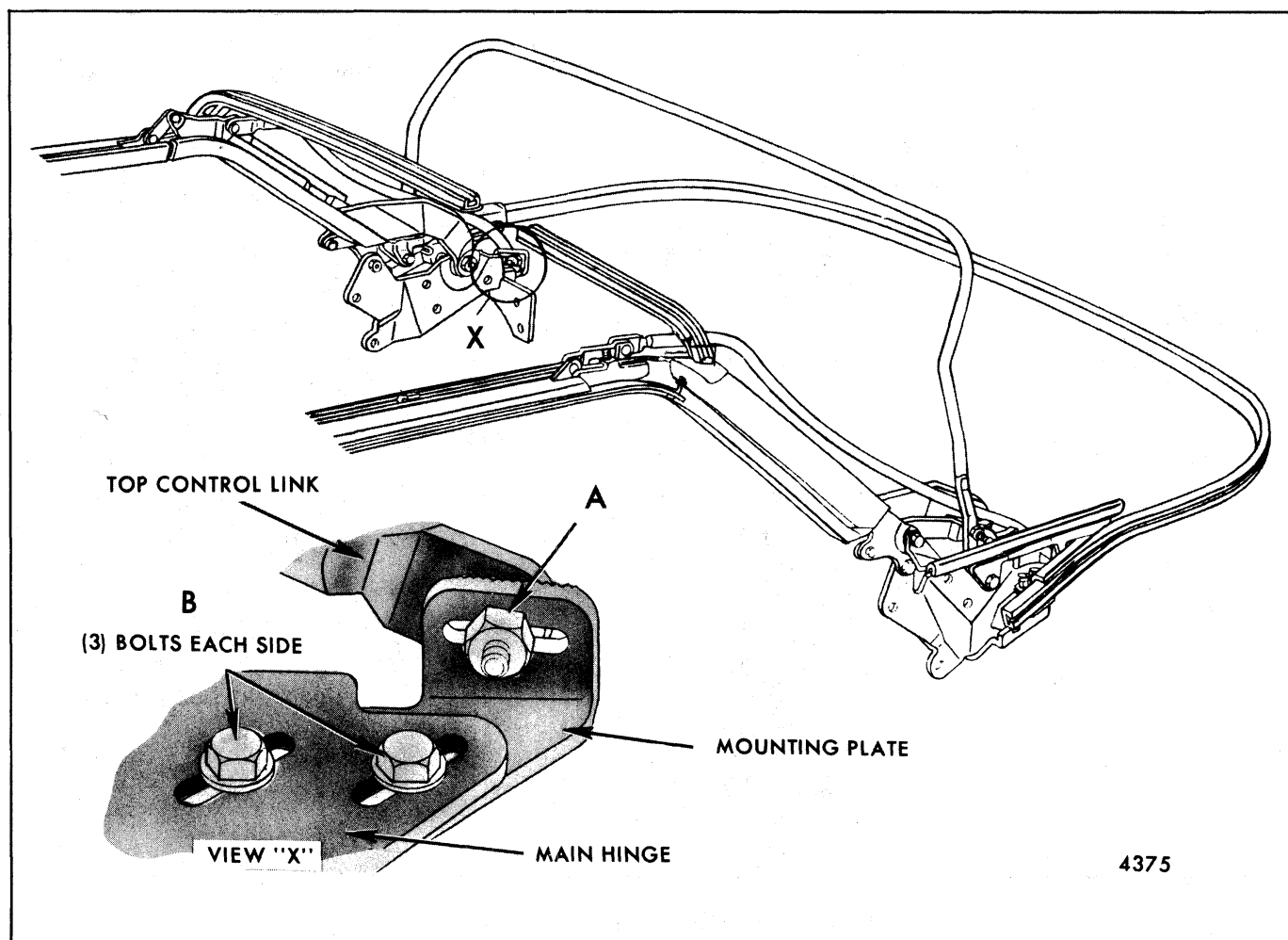


Fig. 8-102-Top Control Link and Mounting Plate Attachment

"A", Fig. 8-102) on each side. Allow front and side roof rails to lay normally in folding top compartment.

4. Position top control link serrated bushing outward on each side by raising folded side rail at center and tighten attaching nut.
5. Check for tension on stacked folding top.
6. Repeat step 4 as necessary until proper and equal tension is obtained on each side. Tighten attaching nuts to proper torque.

LOCATING PIN AND SIDE ROOF RAIL HEIGHT ADJUSTMENT

Description

When raising a top, always lock the left lock handle first. The left striker guide hole is round and the right

striker guide hole is slotted laterally. To lock the left side of the top, pull down on the front roof rail with one hand to position the left locating pin in the striker hole. Then rotate the lock handle to the locked position. Repeat the operation on the opposite side. Manual assistance (up to 30 pounds) may be required to position locating pins in the windshield header. This is a normal condition.

Figure 8-103 illustrates a body dimensional specification from a bolt on the main hinge to a properly installed striker on the windshield header. The distance from the center of the striker guide hole, "A", to the center of the main hinge bolt, "B" as shown, is $56\frac{7}{32}$ " plus or minus $\frac{3}{16}$ ". Adding the tolerance, the maximum measurement is $56\frac{13}{32}$ ". Subtracting the tolerance, the minimum measurement is $56\frac{1}{32}$ ".

The locating pin and height of the side roof rails are controlled simultaneously by the side rail set screw (Fig. 8-105). Figure 8-104 portrays proper adjustment of the set screw and conditions that can be

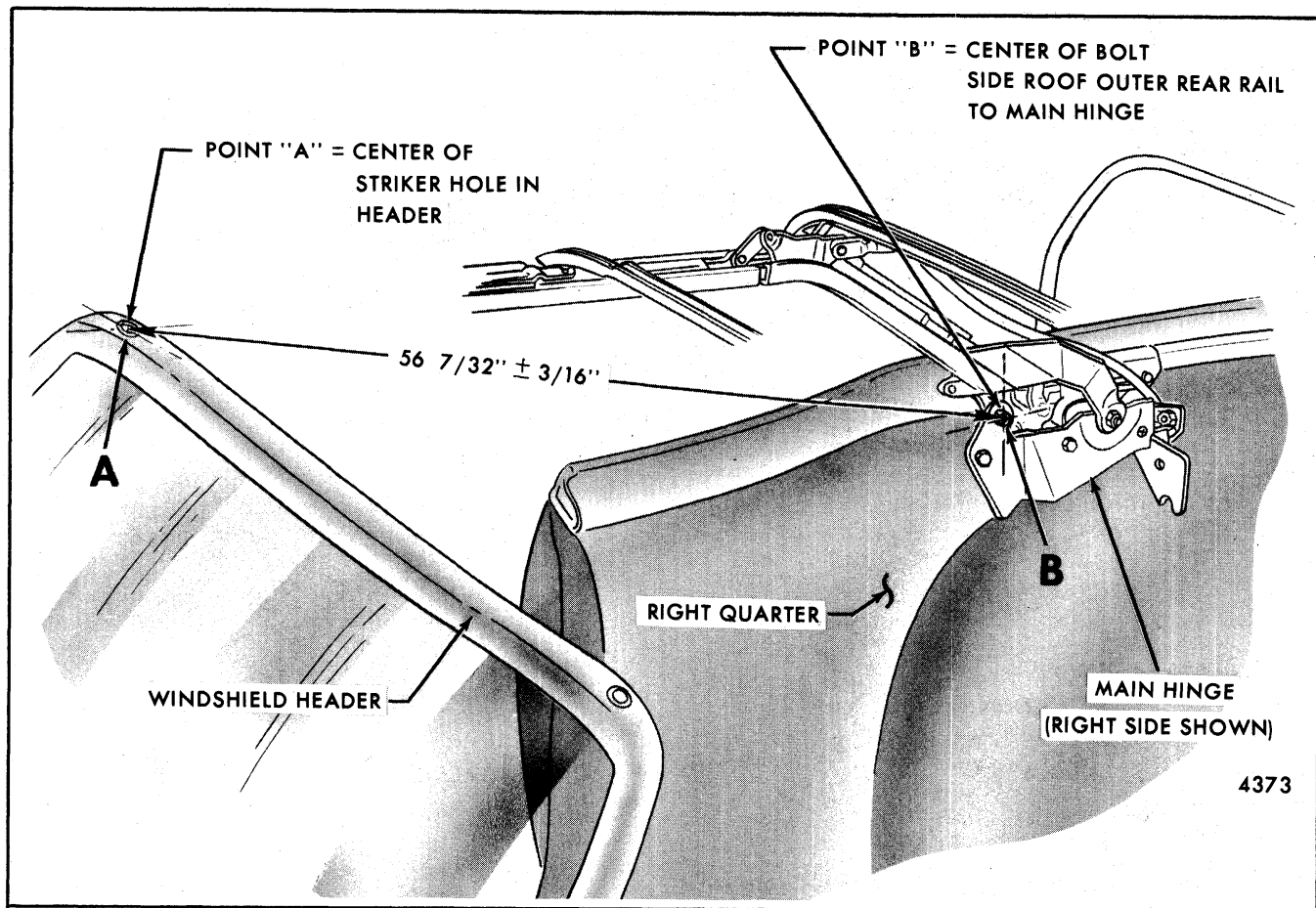


Fig. 8-103-Body Dimensional Specification

caused by improperly adjusted set screws. While the set screw is adjustable, it has only one proper setting.

Procedure

1. Raise top and back off set screw located at center of each side rail (Fig. 8-105). Set screw is 1/8 inch hex head.
2. Position locating pins in windshield header striker guides and lock top to header. Position left pin first.
3. Manually position and then support each side roof rail at proper height over side windows.

Specified dimension from outer corner of side rail to quarter panel (Fig. 8-106) is as follows:

- a. Dimension "A" (measured directly with tape measure) is 16- 3/4" plus or minus 1/8".
- b. Dimension "B" (determined with straight edge and vertical measurement as shown) is 13-1/4" plus or minus 1/8".

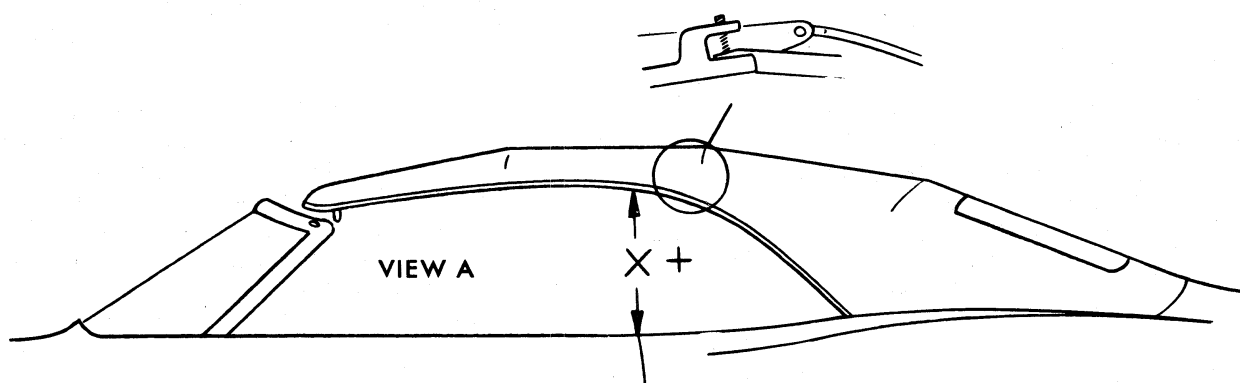
4. With side rails at proper height, adjust each set screw clockwise until it bottoms at side rail. Then, back off set screw one-half turn. Readjust each set screw, if necessary to correct side rail height, after all other tensioning adjustments are completed.

NOTE: Application of high quality plastic thread adhesive to exposed threads on each set screw (Fig. 8-105) is recommended at this time. Follow label directions.

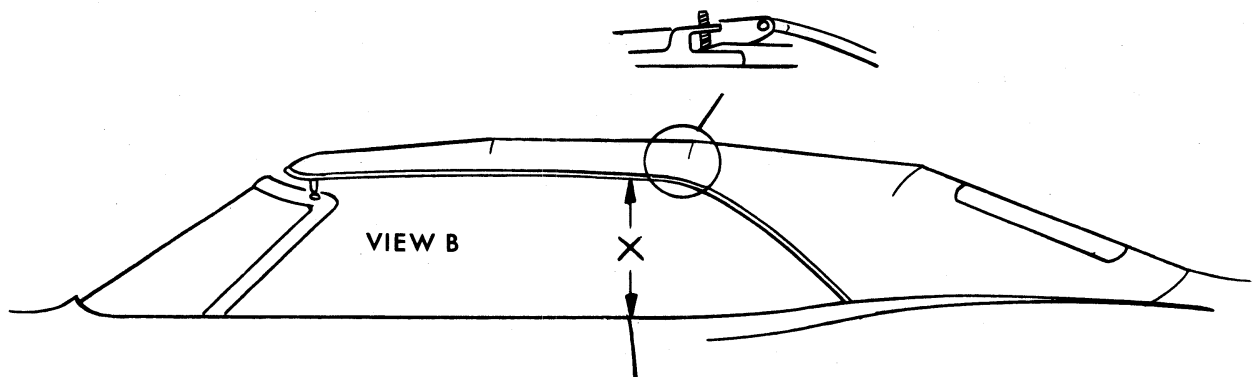
TENSION ADJUSTMENT AND TENSION CHECK OF (UP POSITION) SIDE ROOF RAILS

Description

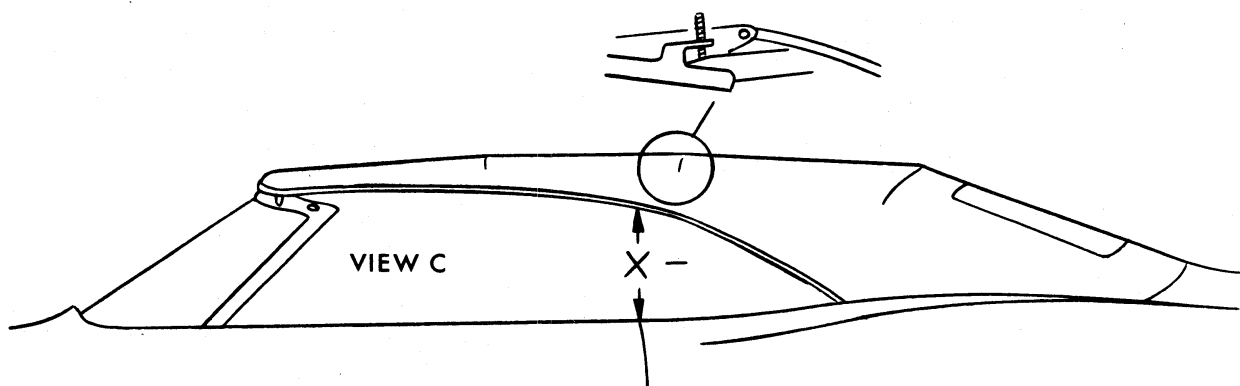
The side roof rails of an inward folding top exert a specified outward force at the center hinge area when the top is raised and locked at the windshield header. The outward force is required for proper contact of weatherstrips to side windows and for stability of the side roof rails.



"HIGH SHOULDER CONDITION" CAUSED BY SET SCREW TOO DEEP
LOCATING PIN TOO SHORT



"PROPER ADJUSTMENT CONDITION" FOR PROPER SETTING SEE:
"SIDE ROOF RAIL AND LOCATING PIN ADJUSTMENT PROCEDURE"



"LOW SHOULDER CONDITION" CAUSED BY SET SCREW NOT DEEP ENOUGH
LOCATING PIN TOO LONG

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Fig. 8-104-Side Roof Rail and Set Screw Adjustment

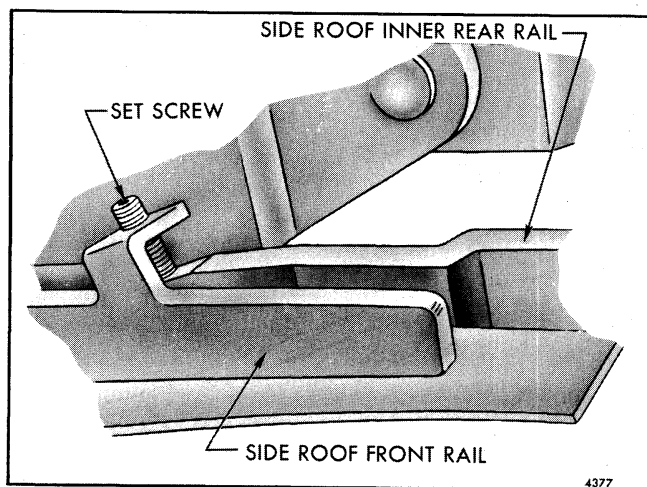


Fig. 8-105-Side Roof Rail Set Screw

When the top is raised and locked, the inner side rails rest with an outward pushing force on a stop at each end of the center bow. Figure 8-107 portrays a cross section of the left and right side roof inner rear rails resting on center bow stops.

The side roof rail tension checking procedure involves separating one side roof rail inwardly from the center bow stop by pulling simultaneously on both side roof inner rear rails. The side roof rail with the least tension always separates first. Check the separation with due care and with proper lighting. The best location to check the separation is inside the car from the rear of the center bow as shown in Figure 8-109.

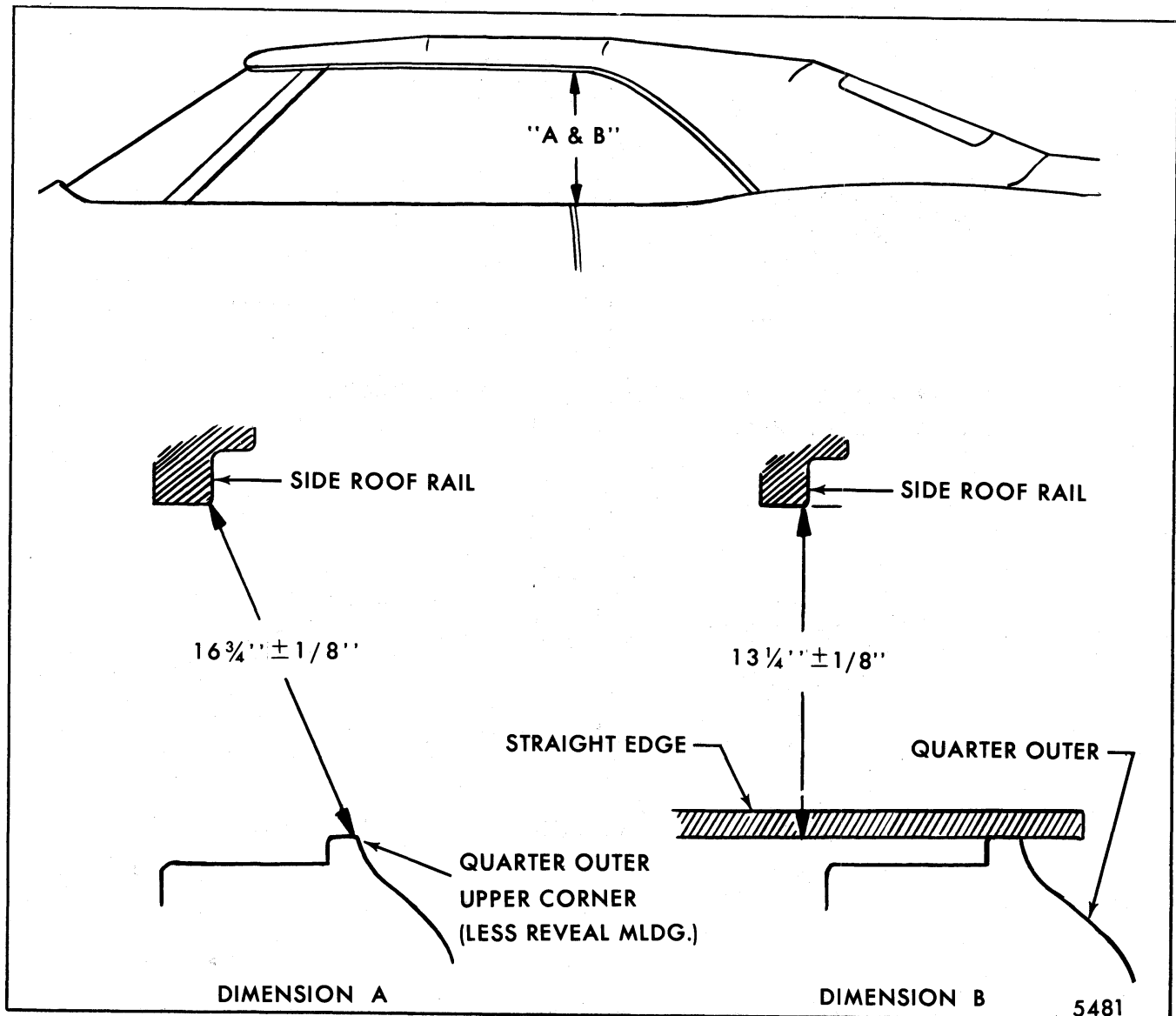


Fig. 8-106-Height of Side Roof Rails

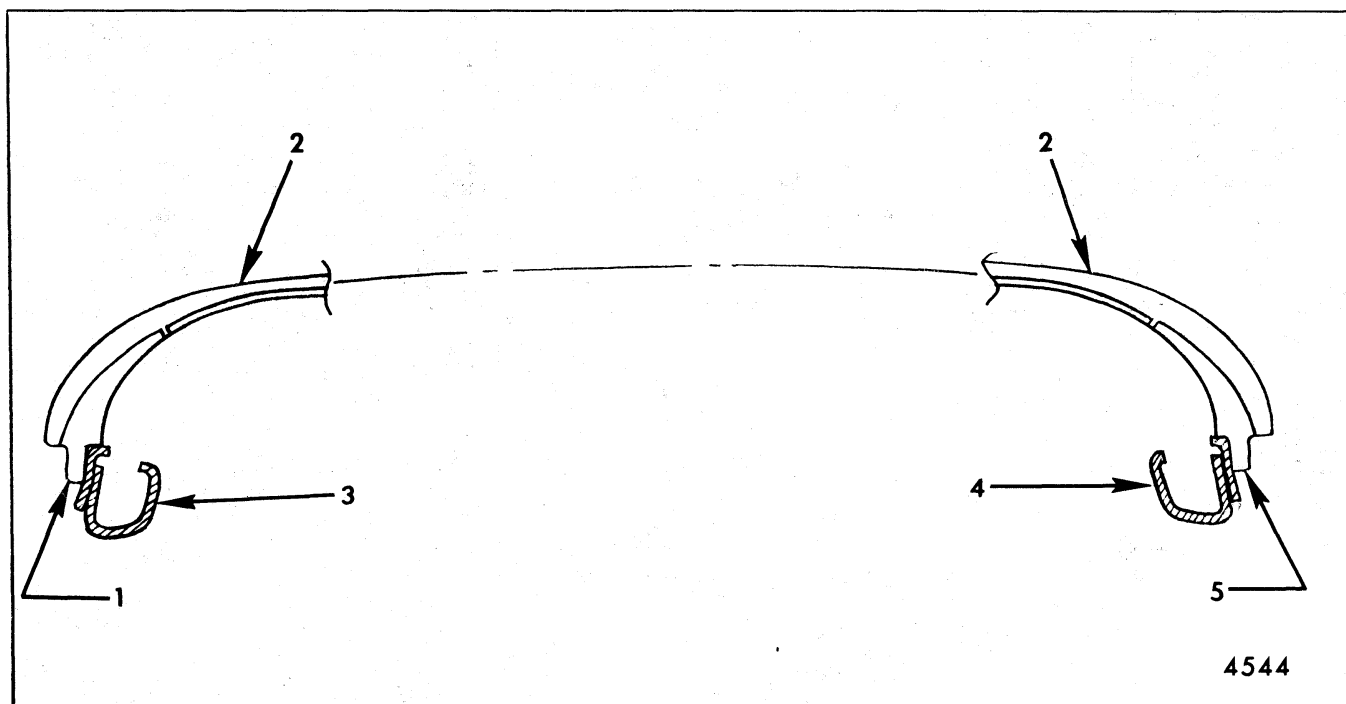


Fig. 8-107-Cross Section of Side Rail to Center Bow Stop Alignment

- | | | | |
|---------------------------|-------------------------------------|--------------------------------------|----------------------------|
| 1. Center Bow Stop (Left) | 3. Side Roof Inner Rear Rail (Left) | 4. Side Roof Inner Rear Rail (Right) | 5. Center Bow Stop (Right) |
| 2. Center Bow Assembly | | | |

SIDE ROOF RAIL UP POSITION TENSION ADJUSTMENT

Procedure

In the event one or both side roof rails require tension adjustment, it is first necessary to check and, if necessary, to complete the "Folding Top Stacked Position Tension Adjustment", then proceed as follows:

1. Lower top to stacked position.
2. Scribe fore-aft location of mounting plate at main hinge for accuracy of controlling adjustment.
3. Loosen three mounting plate attaching bolts (Fig. 8-102).
4. Using pry bar or suitable tool, slide mounting plate in small increments ($1/16$ to $1/8$ of an inch) forward (to decrease tension), or rearward (to increase tension).
5. Tighten only two mounting plate bolts for checking purposes.

6. Repeat step 4 as required.

7. Tighten all mounting plate bolts when proper adjustments have been made.

SIDE ROOF RAIL TENSION CHECK

Procedure

The following procedure may be used to facilitate checking the tension of inward folding side roof rails.

1. With top raised and locked at windshield header, mount tension checking tool (J-23790, BT-7III or equivalent) on each inner rear rail at center bow (Fig. 8-108).
2. Tighten tensioning device in small increments while observing ends of center bow for separation at affected side rail. Tighten tensioning device until a $1/16$ " separation occurs. Use flashlight and $1/16$ " shim. The separation should not exceed $1/16$ ".

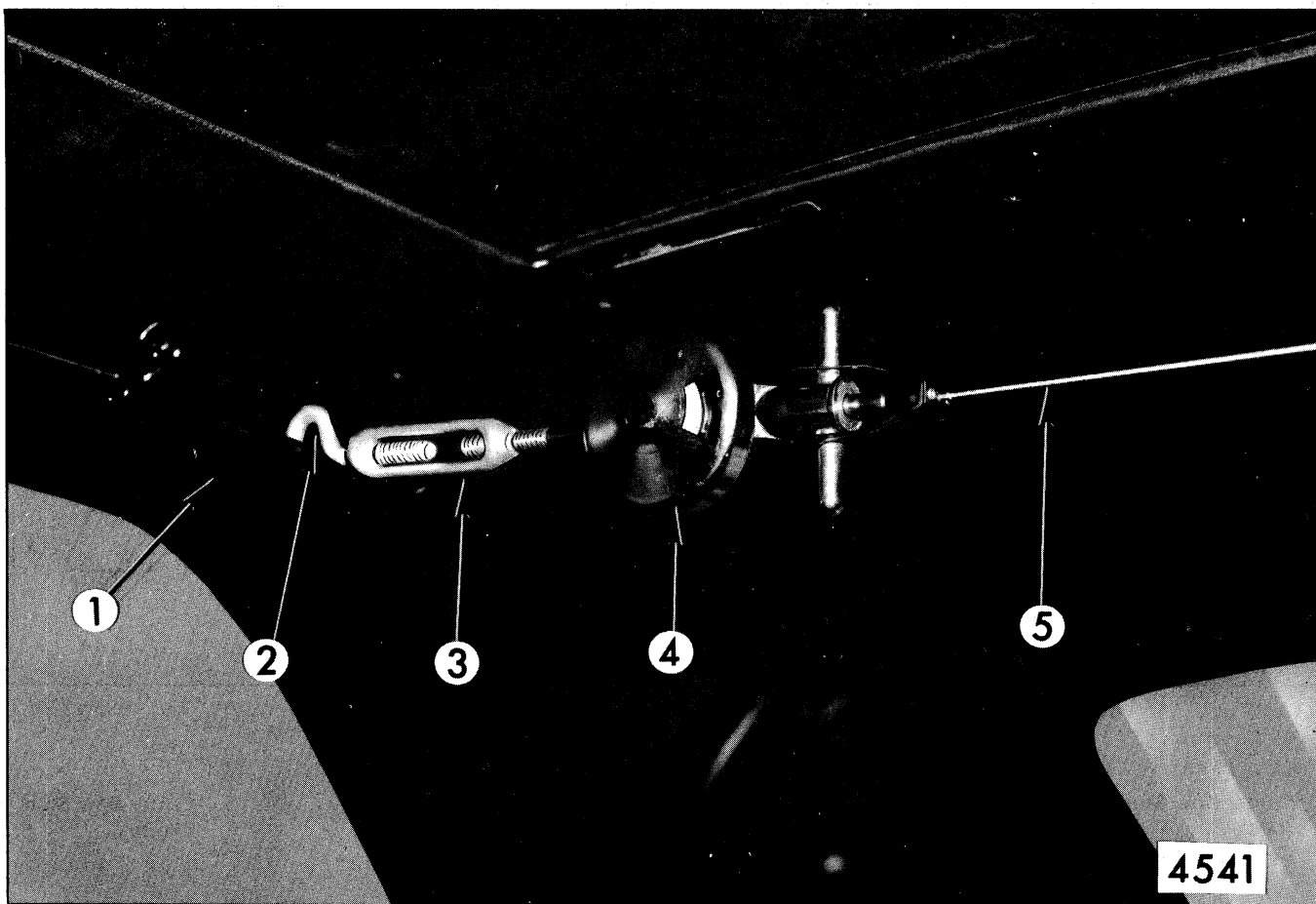


Fig. 8-108-Inward Folding Top Tension Checking Tool

- | | | | |
|------------------------------|-------------------|---------------|------------------|
| 1. Side Roof Inner Rear Rail | 2. Attaching Hook | 3. Turnbuckle | 4. Tension Scale |
| | | | 5. Cable |

3. When (1/16") separation occurs at one side rail at a scale reading below 50 pounds, same side rail is insufficiently tensioned and requires adjustment. Adjust affected control link mounting plate rearward to increase tension.

4. Cross-check body with tram gauge or tape measure as described in Figure 8-110. Side rails are in good alignment when both diagonal measurements are within 3/8 of an inch. Recheck measurements to assure accuracy. If difference between measurements exceeds 3/8 of an inch, side rail of longer measurement requires adjustment to decrease tension. In this event, adjust affected control link mounting plate forward.

5. An inward folding top is in proper alignment when following two conditions are present:

- a. Tension checking tool indicates a minimum of 50 pounds of force to separate side rail

1/16 of an inch from center bow stop.

- b. Diagonal measurements illustrated in Figure 8-110 are within 3/8 of an inch.

FRONT ROOF RAIL LOCK HOOK ADJUSTMENT

Conditions of unsatisfactory lock operation caused by the lock hook can be corrected as follows:

1. To tighten or increase locking action, turn lock hook clockwise.
2. To reduce or decrease locking action, turn lock hook counterclockwise (Fig. 8-95).

NOTE: Always lock left side of top before locking right side.

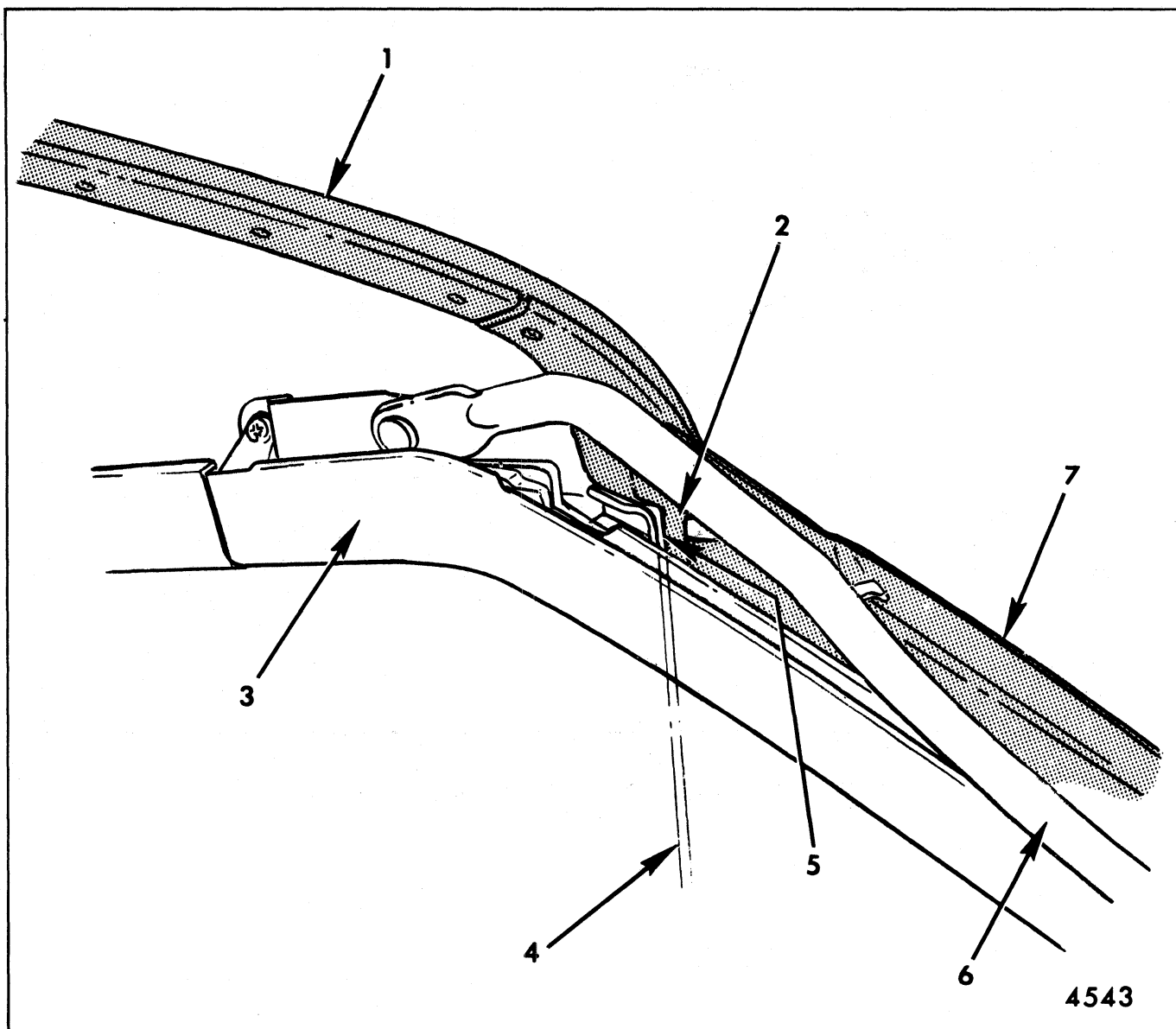


Fig. 8-109-Checking Separation of Side Rail from Center Bow Stop (Inside Car)

- 1. Center Bow
- 2. Center Bow Stop
- 3. Side Roof Inner Rear Rail

- 4. 1/16" Separation Occurs Here

- 5. Check with Shim in Direction of Arrow
- 6. Rear Control Link

- 7. Side Roof Outer Rear Rail (Part of Center Bow Assembly)

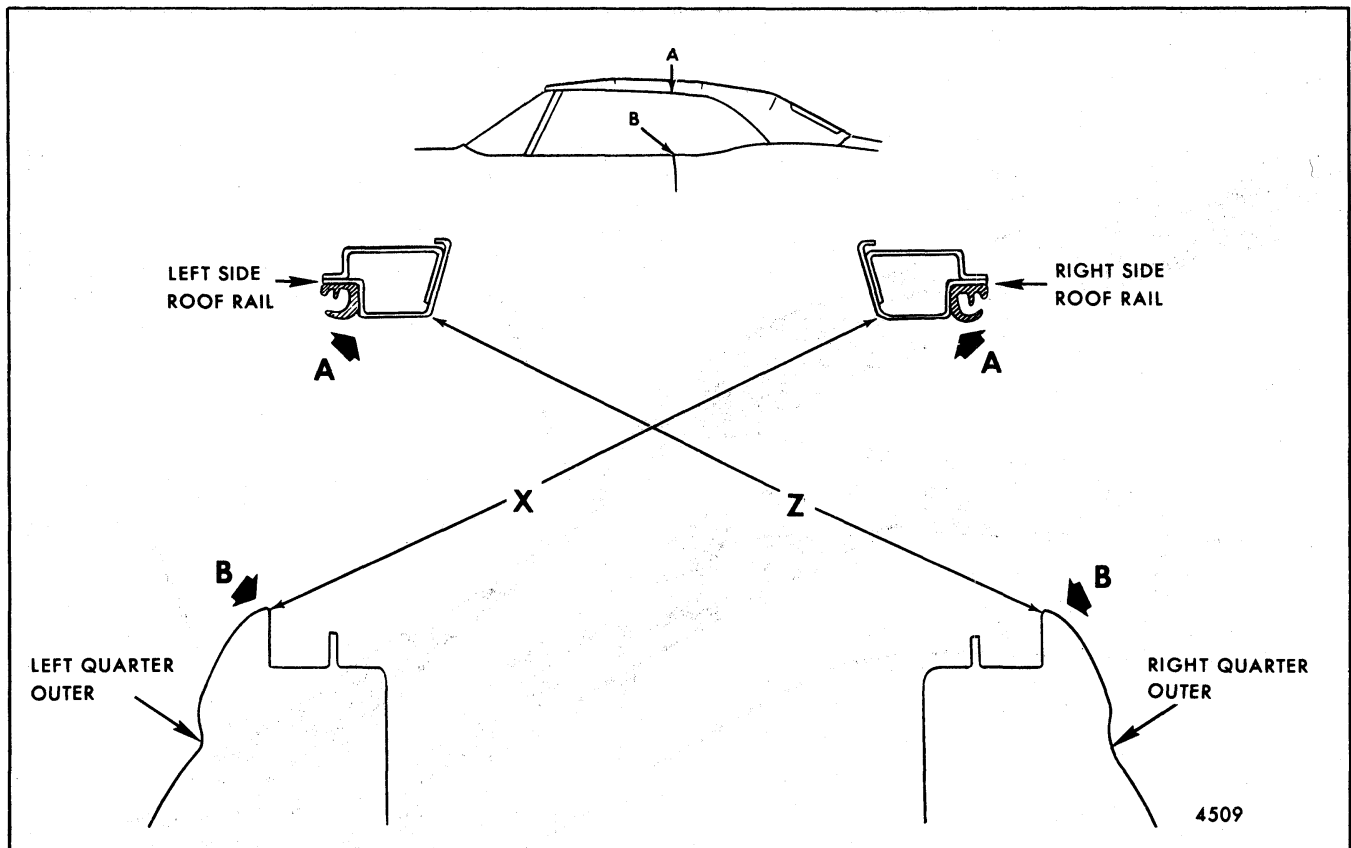


Fig. 8-110-Diagonal Check of Side Roof Rails

SECTION 9

SEATS

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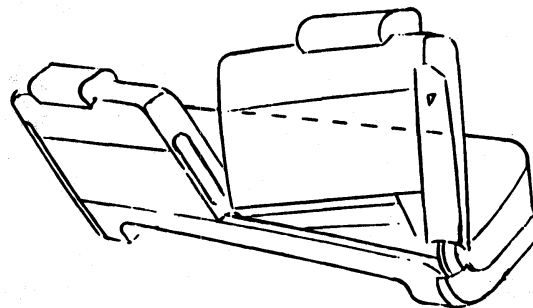
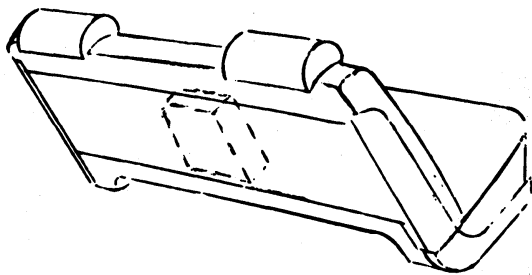
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FRONT SEATS

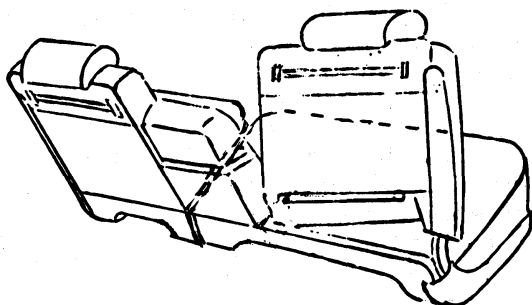
FRONT SEATS - INTRODUCTION

Figures 9-1 and 9-2 illustrate the various types of seats used in the 1976 models.

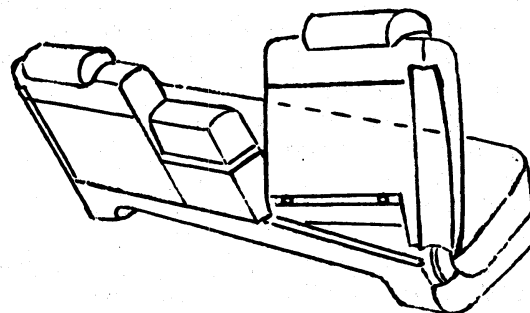
NOTE: In some portions of the Seat Section, removal and installation figure references for the various types of seats will be shown under the procedure title. Refer to the illustration(s) for the type of seat being serviced.



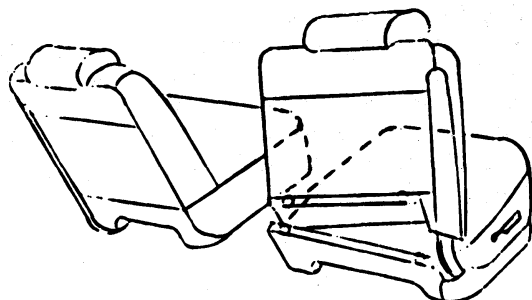
FULL WIDTH BENCH SEATS BUILT-IN CENTER ARM REST—SOME STYLES



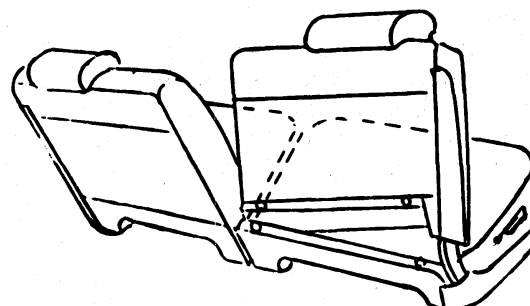
60-40 SEAT



FULL WIDTH NOTCH-DOWN BENCH SEAT



**40-40 SEAT
(RECLINING PASSENGER BACK)**

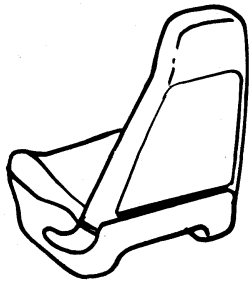


**50-50 SEAT
(RECLINING PASSENGER BACK)**

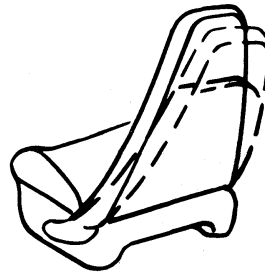
**NOTE: TWO-DOOR STYLE FOLDING BACKS SHOWN
FOUR-DOOR STYLES HAVE NON-FOLDING BACKS**

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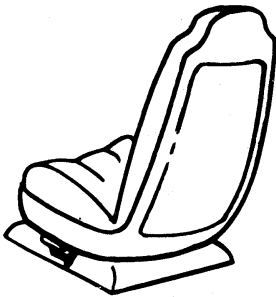
Fig. 9-1-Types of Front Seat (All Except Bucket Seats)



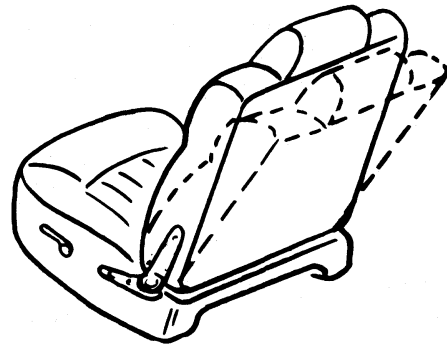
STANDARD BUCKET SEAT



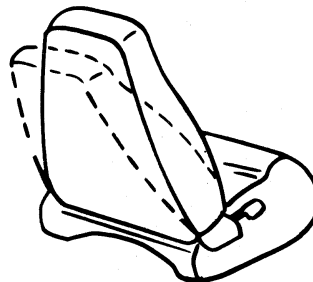
BUCKET SEAT WITH ADJUSTABLE BACK



SWIVEL SHELL BUCKET SEAT



SALON BUCKET SEAT (RECLINING BACK)



CUSTOM BUCKET SEAT (RECLINING BACK)

Fig. 9-2-Types of Bucket Seats

FULL WIDTH, 60-40, 50-50 AND 40-40 FRONT SEATS

All front seats except bucket seats (Fig. 9-1) incorporate front seat back head restraints on the driver's and passenger's seat back. The head restraints are designed so they cannot be removed from the seat back without first inserting a flat tool inside the head restraint support tube to release the lock clip; however, the head restraints can be raised or lowered for proper positioning.

All two-door style front seats and folding second and third seats are equipped with positive acting seat back locks. On "B, C and E" body two-door styles the front seat back lock can be unlocked by operating the control lever (outboard side of seat back) rearward. On "A, F, H and X" body two-door styles the front seat back lock can be unlocked by operating the control lever (rear outboard corner of seat back) upward.

All front and rear seat cushions and backs incorporate formed foam pads, formed to fit the contours of the full panel seat back frame assembly and also the designed contour of the seat cushion. The 60-40 front seat consists of an individually controlled passenger seat (60 percent of front seat width) and an individually controlled driver seat (40 percent of front seat width).

The 50-50 and 40-40 front seats consist of a split front seat with both the driver and passenger seat individually controlled. The passenger seat can be equipped with a reclining seat back which can be reclined rearward approximately 20 degrees by lifting the front of the control lever located at the outboard side of the seat cushion. When the control lever is actuated upward, the spring loaded reclining unit located in the right side of the cushion is released allowing the seat back to be pushed rearward or allow the spring loaded reclining unit to bring the seat back forward.

NOTE: On Cadillac styles equipped with automatic door locks, the driver's seat is equipped with a seat sensor unit. Two types of seat sensor switches are used - pressure sensitive switch located under the trim cover assembly on 6CB69 and 6DF23-33 styles on full width, 60-40, 50-50 and 40-40 seats and a beam type sensor switch attached to one of the springs on the driver's side on other Cadillac styles.

An optional new power-operated front passenger reclining seat back is available on Cadillac "C and E" styles equipped with 50-50 front seats with power-operated four-way adjusters. The power-operated reclining seat back is controlled by the front toggle button on the seat adjuster control switch located in

the passenger seat cushion outboard side panel. When the front toggle button is raised, the seat back reclines; when the toggle button is pushed downward, the seat back moves forward.

BUCKET SEATS

All bucket seats shown in Figure 9-2 are the high seat back with integral head restraint type and incorporate formed seat cushion and back foam pads.

Two-door style bucket seats (except swivel bucket seats) incorporate positive acting seat back locks. The locks are located at the rear, lower outboard corner of the seat back and are unlocked by lifting the lock handle.

SWIVEL BUCKET SEAT

Shell swivel bucket seats are available for both the driver and passenger seat on some styles. The shell bucket swivels approximately ninety degrees towards the door opening to provide easier entrance and exit from the body. The control lever for the swivel mechanism is located at the outboard side of the seat. When the lever is pushed downward the swivel mechanism unlocks and the seat can be turned towards the door opening. When the control lever is released the swivel mechanism will lock when the seat is in the forward position.

RECLINING BACK BUCKET SEATS

Bucket seats with adjustable reclining seat back are available on the passenger seat on some styles and on both the passenger and driver's seat on other styles. The reclining seat backs can be reclined approximately 20 degrees rearward of normal position by lifting the control lever at the outboard side of the seat cushion and exerting rearward pressure on the seat back to tilt rearward, or with no pressure on the seat back allow seat back to return forward.

FRONT SEAT DEALER RELOCATION PROVISIONS

On the Chevrolet, Pontiac, Oldsmobile and Buick "A" body styles with full width bench manual seat adjusters and 60-40 manual seat adjusters, the horizontal travel of the adjusters can be relocated approximately 3/4 inch forward as described and illustrated below. When this relocation is performed there will be 3/4 inch less rearward travel.

1. Remove seat assembly from body as described

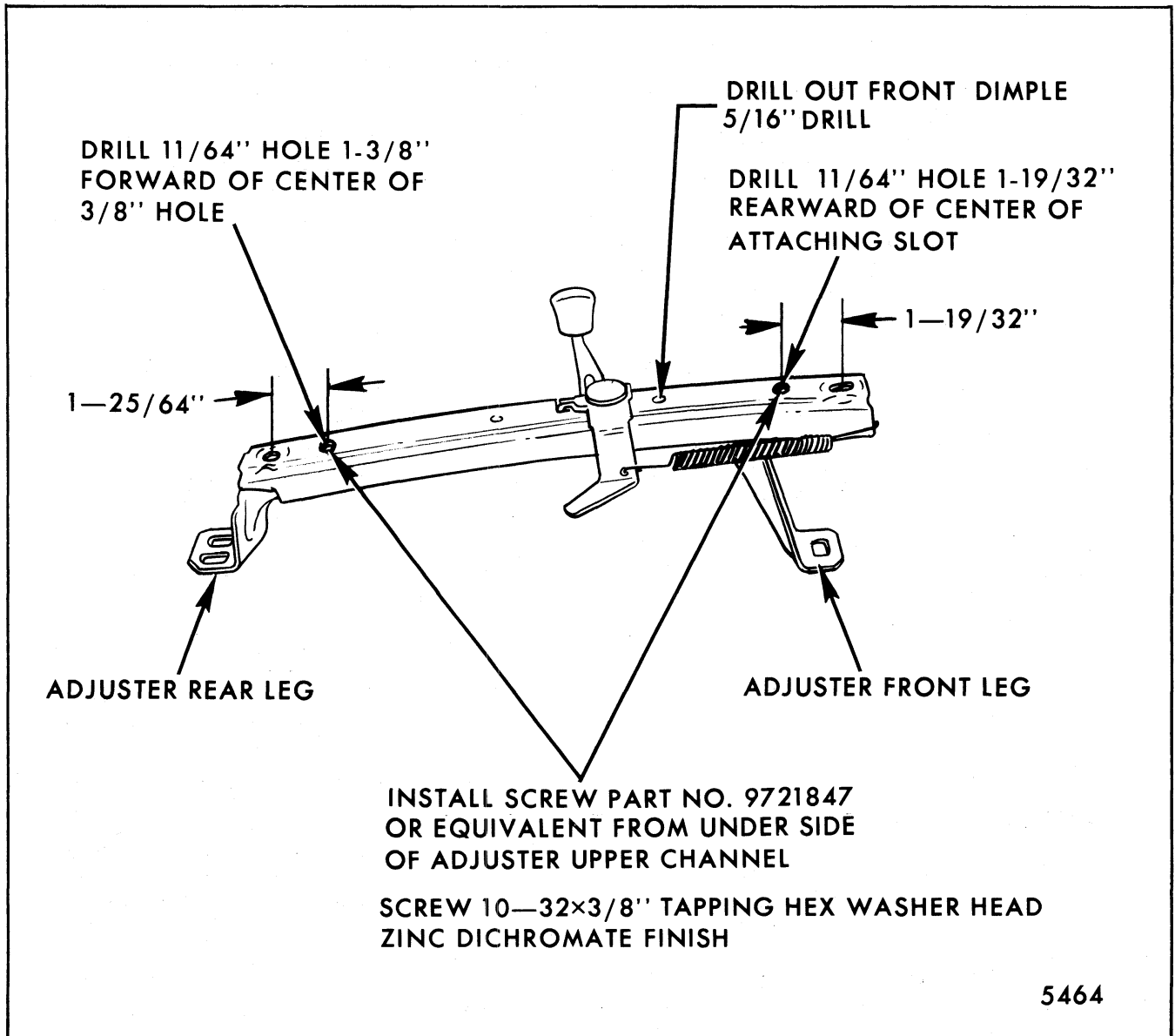


Fig. 9-3-Dealer Relocation Provision for Moving Adjuster Forward Travel 3/4" Forward - "A" Body Styles ONLY Equipped with Full Width Bench Seat Manual Adjusters or 60-40 Seat Manual Adjusters

- under "Front Seat Assembly - Removal and Installation"; then remove both seat adjusters from seat.
2. Remove assist spring from both seat adjusters; then perform the following rework on both right and left seat adjuster.
 - a. With adjuster in full forward position, drill an 11/64" hole in upper channel of adjuster 1-19/32" rearward of center of adjuster-to-seat frame front attaching hole (see Fig. 9-3). Install screw, Part No. 9721847 or equivalent (10-32 x 3/8" tapping), from underside of adjuster upper channel.
 - b. With adjuster in full rearward position, drill an 11/64" hole in upper channel of adjuster 1-3/8" forward of center of adjuster-to-seat frame rear attaching hole (see Fig. 9-3). Install screw, Part No. 9721847 or equivalent (10-32 x 3/8" tapping), from underside of adjuster upper channel so that head of screw is on inside of upper channel.
 - c. With adjuster in full rearward position, drill out front dimple in upper channel - use 5/16" drill.
 3. Check forward travel of both adjusters. Upper channel should move forward sufficiently so

that lock bar will engage in the last locking notch.

NOTE: It may be necessary to place rear leg of adjuster in vise and with adjuster in full forward position, tap rear of adjuster upper channel with hammer and block to slide over roller until lock bar will engage in last locking notch.

4. Install assist spring on both right and left adjuster, install adjusters to seat frame and install seat assembly in body as described under "Front Seat Assembly - Removal and Installation".

NOTE: With the exception of the dealer relocation provision previously described for those specific body styles and seat adjusters, there are **NO OTHER** front seat dealer relocation provisions. On any other body styles or seat adjusters **DO NOT** attempt to change the designed seat position by altering the designed seat adjuster-to-floor pan anchor provisions or seat adjuster-to-seat frame anchor provisions as it could affect the performance of the seat system.

SEAT TORQUE SPECIFICATIONS

The following torque specifications should be used when servicing seat assemblies:

BOLT OR NUT LOCATION AND TORQUE -FOOT-POUNDS

NOTE: Some service replacement assemblies such as seat cushion and back frame assemblies and rear compartment pan assembly may have unthreaded nuts for attachment of seat adjusters, seat back and lap belts. These unthreaded nuts must be tapped with proper size and threaded tap or either the original or

a new thread forming bolt must be used. If thread forming bolts are used, apply 15 to 20 pounds of straight-in pressure to start thread forming action of bolt.

1. Seat adjuster and folding seat back-to-floor pan bolts or nuts - 12 to 18 foot-pounds.
2. Seat adjuster-to-seat frame bolts - 12 to 18 foot-pounds.
3. Seat back to cushion frame bolts - 16 to 22 foot-pounds.
4. Seat back hinge bolts - 12 to 18 foot-pounds.
5. Seat back lock attaching screws - 12 to 18 foot-pounds.
6. Seat back lock striker and inner side bar stop - 12 to 18 foot-pounds.
7. Lap belt-to-floor pan anchor bolts - 35 to 45 foot-pounds.

CAUTION: *Seat attaching parts such as seat adjuster-to-floor pan bolts or nuts, seat adjuster-to-seat frame bolts, seat cushion frame-to-seat back frame bolts, seat back lock bolts, seat back lock striker, etc., are important attaching parts in that they could affect the performance of vital components and systems. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.*

MANUALLY OPERATED SEAT ADJUSTER - TROUBLE DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Adjuster will not lock. (Contd)	1. Locking wire too tight.	1. (a) Bench Seats only - adjust locking wire tension hook into another hole to loosen wire (see Figs. 9-8 and 9-9). (b) Bucket seats only - loosen both seat adjuster-to-floor pan and seat adjuster

MANUALLY OPERATED SEAT ADJUSTER - TROUBLE DIAGNOSIS CHART (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
1. Adjuster will not lock. (Contd)	<p>2. Adjuster lock bar spring disconnected or broken.</p> <p>3. Adjuster lock bar sticking or binding.</p>	<p>to seat frame attaching bolts; then move adjusters inboard as much as possible and tighten bolts.</p> <p>2. Connect spring or install new spring (see Figs. 9-8 and 9-9).</p> <p>3. (a) Lubricate lock bar pivot.</p> <p>(b) If bar is binding, eliminate cause of binding or replace adjuster.</p>
2. Adjuster will not unlock.	<p>1. Locking wire too loose or disconnected.</p> <p>2. Adjuster lock bar sticking or binding.</p>	<p>1. (a) Bench seats only - adjust locking wire tension hook into another hole to tighten wire. Connect locking wire to adjusters.</p> <p>(b) Bucket seats only - with long pliers, carefully bend a kink in wire to shorten wire - check to insure full lock engagement.</p> <p>2. (a) Lubricate lock bar pivot.</p> <p>(b) If bar is binding, eliminate cause of binding or replace adjuster.</p>
3. When left adjuster locks, right adjuster is between lock positions.	1. Right adjuster either rearward of forward of left adjuster.	1. Loosen adjuster to floor pan bolts or nuts - move one adjuster forward or rearward as far as possible and the other adjuster the opposite direction.
4. Seat hard to move forward or rearward.	<p>1. Adjuster(s) improperly lubricated.</p> <p>2. Adjuster(s) binding due to bent or damaged channels.</p> <p>3. Adjusters not in parallel alignment with each other.</p>	<p>1. Lubricate adjuster channels with Lubriplate AAW or equivalent.</p> <p>2. Replace adjuster.</p> <p>3. Loosen floor pan attaching bolts or nuts, align adjusters parallel on floor pan and retighten bolts or nuts.</p>

POWER OPERATED SIX-WAY OR FOUR-WAY SEAT ADJUSTER MECHANICAL DIAGNOSIS CHART

NOTE: If it is apparent or suspected that the trouble is in the electrical system refer to "Electrical Section - Power Seats - Diagnosis Chart".

CONDITION	APPARENT CAUSE	CORRECTION
1. Horizontal operation of seat not smooth (jerky) - apparent hard operation	1. Improper lubrication of adjuster shoes and channels. 2. Adjuster horizontal actuator gear too tight to rack gear. 3. Adjuster shoes too tight in upper channel.	1. Lubricate adjuster upper channel and plastic shoes 2. See "Horizontal Actuator Adjustment". 3. Install new shoes on adjuster lower channel.
2. Horizontal chuck or looseness	1. Horizontal actuator improperly adjusted to rack gear.	1. See "Horizontal Actuator Adjustment".
3. One adjuster will not operate horizontally.	1. Horizontal drive cable disconnected or damaged. 2. Horizontal actuator inoperative.	1. Check horizontal drive cables, replace if damaged. 2. Replace horizontal actuator assembly.
4. One adjuster will not operate vertically.	1. Vertical drive cable disconnected or damaged. 2. Vertical gear nut inoperative.	1. Check vertical drive cables, replace if damaged. 2. Replace vertical actuator assembly.
5. Both adjusters will not operate horizontally and/or vertically.	1. Inoperative horizontal and/or vertical solenoid in transmission. 2. Damaged, broken or inoperative solenoid plunger, shaft, dog, dog spring, gear or drive gear (Fig. 9-30)	1. See "Electrical Section - Checking the Solenoid". 2. Replace damaged, broken or inoperative solenoid part with new part.
6. Vertical chuck or looseness.	1. Excessive clearance at vertical gear nut tension spring.	1. Grind down top of vertical gear nut shoulder nut 1/64" to 3/64" maximum.

POWER OPERATED PASSENGER RECLINING SEAT BACK MECHANICAL DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat back does not recline or move forward when seat motor operates.	1. Drive cable disconnected or damaged. 2. Inoperative reclining (front) solenoid in transmission. 3. Damaged, broken or inoperable solenoid plunger, shaft, dog, dog spring, gear or drive gear (Fig. 9-30). 4. Damaged, broken or inoperable reclining actuator gear nut.	1. Check drive cable, replace if damaged. 2. See "Electrical Section - Checking the Solenoid" 3. Replace damaged, broken, or inoperable solenoid part with new part. 4. Check reclining gear nut, replace if damaged.
2. Seat motor inoperative.	1. See "Electrical Section - Power Seats - Diagnosis Chart".	1. See "Electrical Section - Power Seats - Diagnosis Chart".

FRONT SEAT ADJUSTMENTS

At Floor Pan Attachment

On both manual and power-operated seats, a small amount of fore and aft or side adjustment is available at the seat adjuster- to-floor pan attaching bolts which can be utilized towards alignment of the seat assembly or alignment of the seat adjusters with each other.

This adjustment can be used to help correct the following conditions:

1. Hard or slow operation due to adjusters not being parallel with each other.
2. Passenger side of manually operated seat must be moved forward or rearward slightly to engage in locked position due to one adjuster being forward or rearward of the other.
3. Seat assembly slightly too far to right or left.

Adjuster Locking Wire Adjustment - Full Width Manually Operated Seats

The tension of the locking wire extending between

the adjusters can be adjusted to provide proper locking action of both adjusters, particularly the right (passenger side) adjuster. To tighten or loosen the locking wire, disengage locking wire tension hook from hole in seat frame and relocate hook in one of

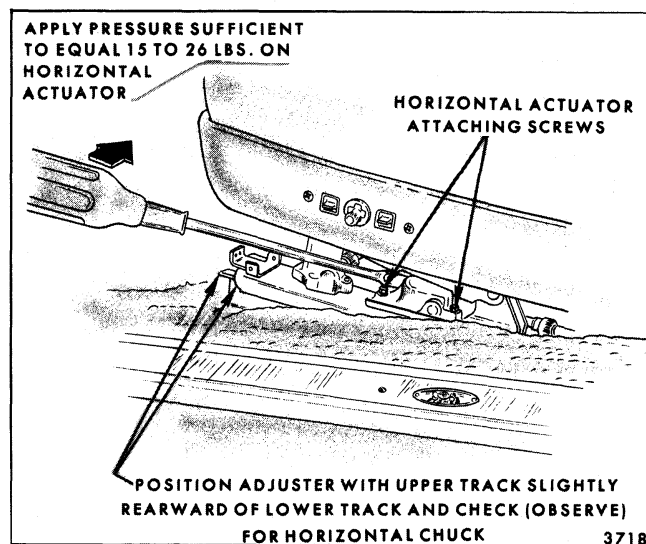


Fig. 9-4-Horizontal Actuator Adjustment - Power Six-Way and Four-Way Seat

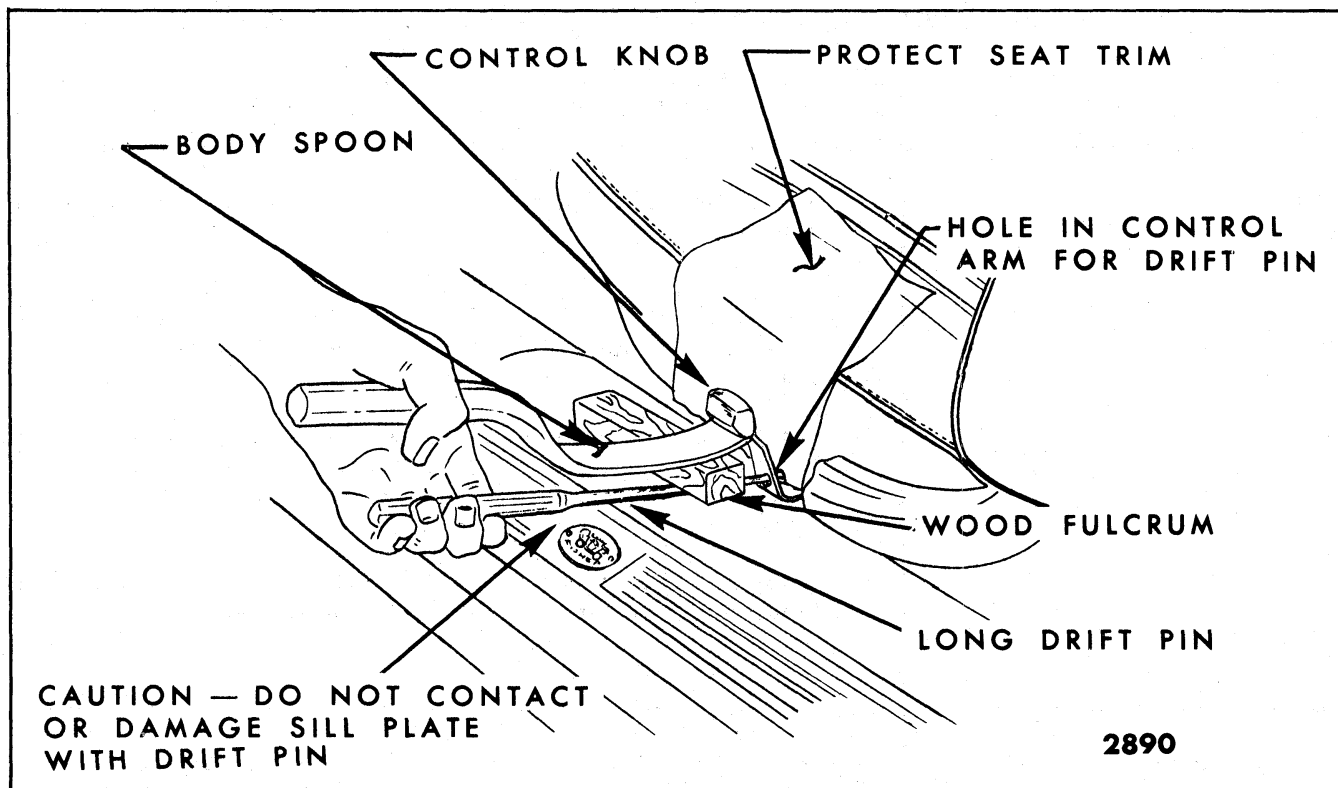


Fig. 9-5-Front Seat Adjuster Control Knob - Removal - Side Control Knob Shown (Front Control Knob Typical)

adjacent holes (see Fig. 9-8 or 9-9). This adjustment can be used to correct the following conditions:

1. Right (passenger side) adjuster does not lock or lock bar is not fully engaged in lock position due to locking wire being too tight. To correct, loosen tension on locking wire.
2. Right (passenger side) adjuster does not unlock due to locking wire too loose. To correct, tighten tension on locking wire.

Power Six-Way and Four-Way Seat Adjuster Horizontal Actuator Adjustment

With seat adjuster assembly installed on seat or seat assembly installed in body, horizontal movement (chucking) can be corrected by adjusting the horizontal actuator and pinion gear in tight to the adjuster lower track rack gear as follows:

1. Operate seat full "up" position and approximately 3/4 full forward position.
2. Loosen horizontal actuator attaching screws (see Fig. 9-4). Using a large screwdriver, inserted as shown in Figure 9-4, apply outward pressure on horizontal actuator (sufficient to equal 15 to

25 pounds on horizontal actuator) and at the same time energize horizontal switch to move seat fore and aft slightly; this helps seat the horizontal actuator pinion gear teeth tight to the lower track rack gear teeth and eliminate any free play between gear teeth. While maintaining outward pressure against horizontal actuator, tighten actuator attaching screws.

MANUALLY OPERATED SEAT ADJUSTER CONTROL ARM KNOB - All Styles with Manually Operated Seat Adjusters

Manually operated seat adjuster control arm knobs are a press fit on the adjuster control arm. The knobs can generally be removed and reinstalled several times without losing adequate retention. If removing or installing a control knob on a trimmed seat assembly, place a protective cover over trim material in area of knob (see Figs. 9-5 and 9-6).

Removal

Using a heavy body spoon, a long drift pin and a piece of wood as a fulcrum as shown in Figure 9-5, carefully remove knob from adjuster control arm.

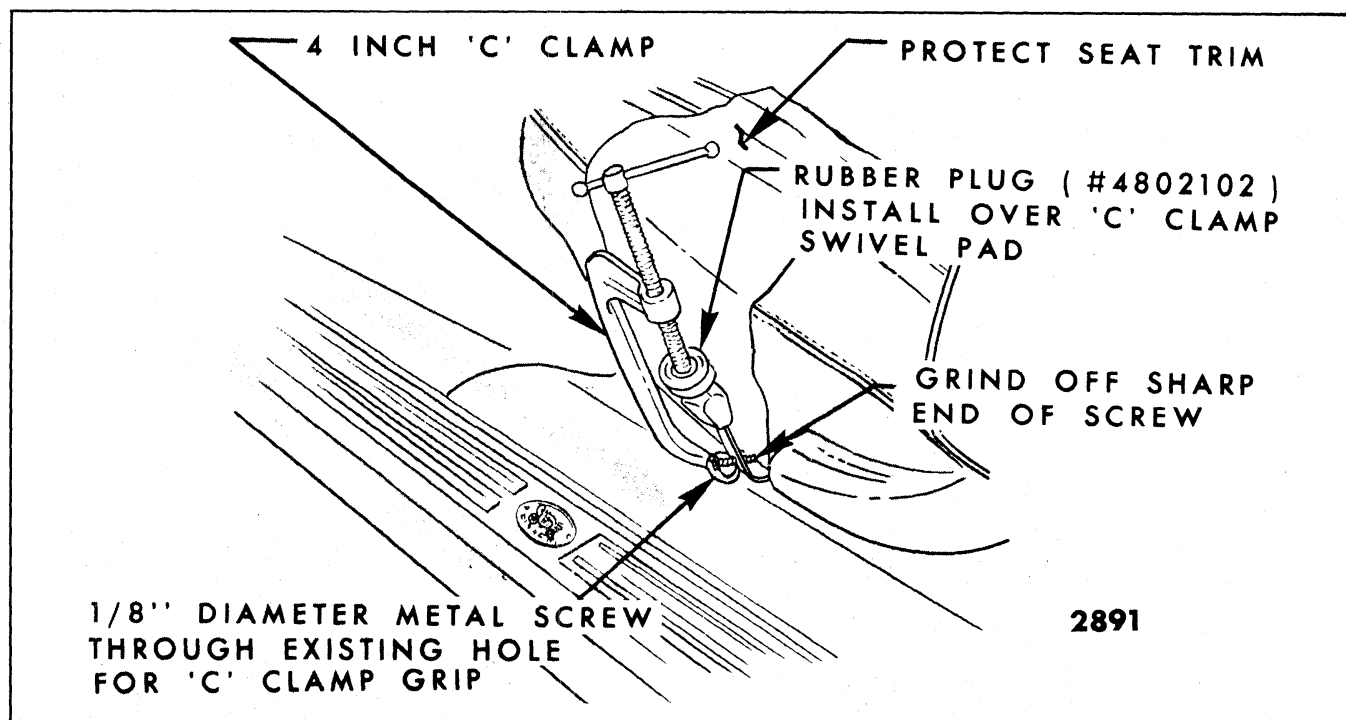


Fig. 9-6-Front Seat Adjuster Control Knob - Installation - Side Control Knob Shown (Front Control Knob Typical)

NOTE: On seats with the control arm at the side of the seat, use caution not to push drift pin down onto rocker panel sill plate. On seats with the control arm at the front of the seat, place a support under control arm to prevent bending arm.

Installation Equipment

The following equipment is required to install seat adjuster control knob.

1. One four inch "C" clamp.

NOTE: Swivel pad of "C" clamp should rotate freely. Where necessary add a drop or two of oil in swivel pad.

2. One round rubber plug (Part No. 4802102 or equivalent) to fit over "C" clamp swivel pad to help prevent swivel pad from slipping off control knob or damaging control knob.
3. One 1/8 inch diameter sheet metal screw approximately one inch long or a drift pin.

NOTE: Round off sharp point of screw to prevent possible damage to seat trim.

Installation Procedure

1. Place pencil mark on seat adjuster control arm,

one inch from end of arm as a guide for determining when knob is fully installed.

2. Place seat adjuster control knob in position on control arm and start knob on by hand pressure making certain knob is started on straight.

NOTE: Install knob so that "gate" mark (on one face of knob) is facing seat and is not visible. On seats with the control arm at the front of the seat, install knob so that gate mark is facing down.

3. Insert sheet metal screw or drift pin in hole provided in adjuster control arm and place "C" clamp in position as shown in Figure 9-6. Use round rubber plug (Part No. 4802102 or equivalent) over swivel pad of "C" clamp to prevent damage to knob and to prevent "C" clamp swivel pad from slipping off knob.
4. Carefully press knob on control arm with "C" clamp until bottom edge of knob is down to mark (one inch below edge of arm).

FRONT SEAT ASSEMBLY - Manual and Power Operated Seats

Description

All seat assemblies are secured to the floor pan by

either nuts installed on floor pan anchor plate studs or bolts installed into anchor nuts or plates in the floor pan.

Cadillac styles equipped with automatic door lock system incorporate a beam type sensor switch attached to the zigzag springs on the driver's seat - Cadillac 6CB69 and limousine styles with marshall springs use a pressure sensitive switch located under the trim cover on the driver's seat position.

NOTE: All electrically operated seats and seats

equipped with cigarette lighter, courtesy lamps etc., have a ground wire secured to the seat frame and under the seat adjuster rear attaching bolt or nut.

The manually operated front seat assemblies incorporate manually operated seat adjusters to provide fore and aft movement of the seat. When the control lever located at the front or side of the seat is actuated, the seat adjusters unlock, permitting horizontal travel of the seat. When the seat is in the desired position and the locking lever is released, the seat is locked.

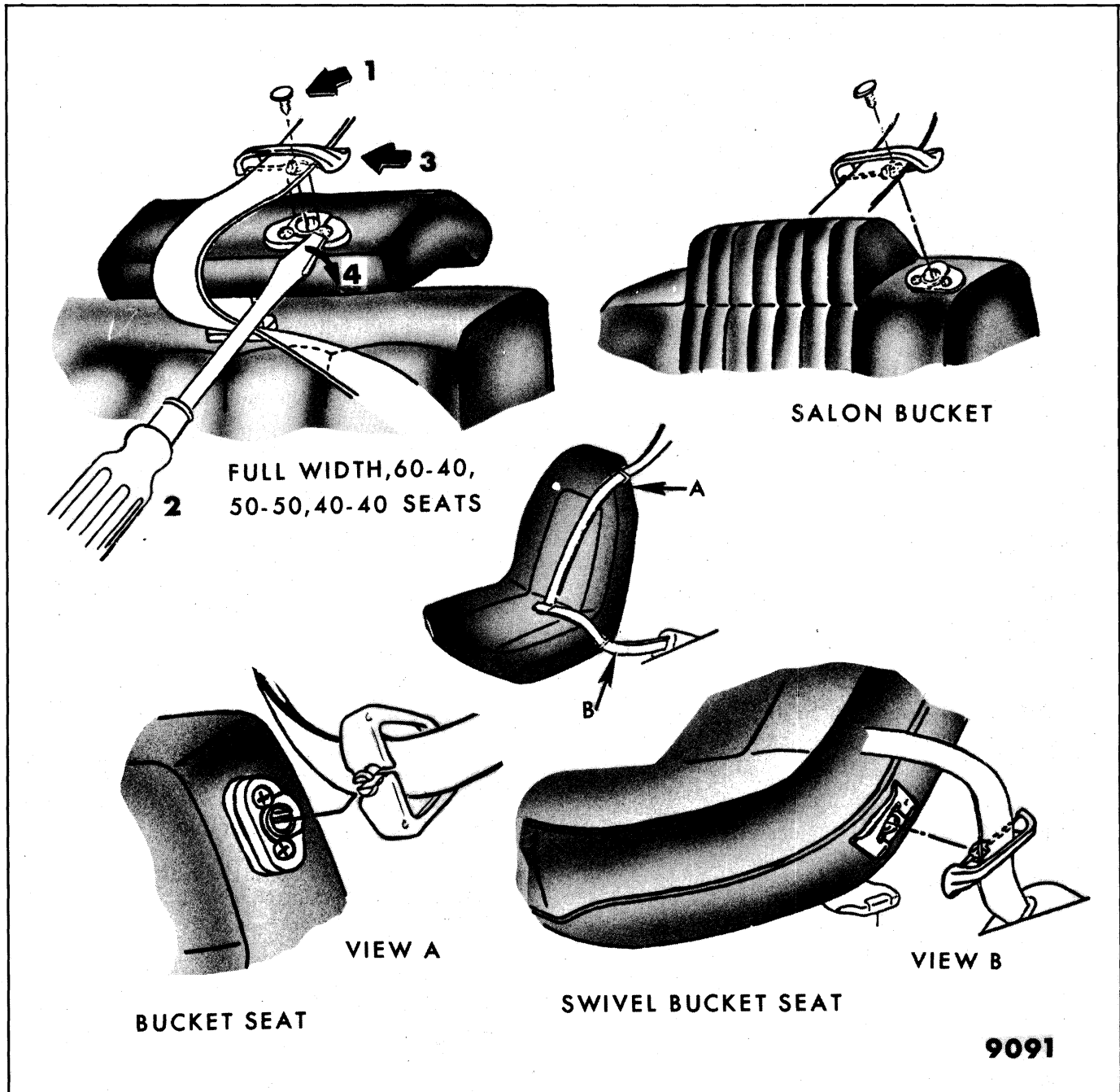


Fig. 9-7-Shoulder Belt Guide - Removal

The power operated two-way, four-way and six-way seat adjusters are actuated by a 12 volt, reversible, shunt wound motor with a built-in circuit breaker. The motor is energized by a toggle-type control switch installed in the left seat side panel or in the left door armrest.

On six-way power operated seats the seat operating mechanism has a transmission assembly which incorporates three solenoids and six drive cables to the seat adjusters. One solenoid controls the vertical movement of the front of the seat, the second solenoid controls the horizontal movement of the seat and the third solenoid controls the vertical movement of the rear of the seat. When the control switch is actuated, a double contact in the switch first energizes the correct solenoid which engages the solenoid plunger with the driving gear dog, then energizes the motor. The driving gear rotates the drive cables and operates both adjusters. When the adjusters reach their limit of travel, the drive cables stop their rotating action and torque is absorbed by the rubber coupler connecting the motor and transmission. When the control switch is released, a return spring returns the solenoid plunger to its original position disengaging it from the driving gear dog.

Cadillac styles with power operated reclining seat back are equipped with four-way power operated seat adjusters and six-way seat adjuster switch and transmission. The power operated seat back reclining actuator operates from the front toggle switch of the six-way seat switch and the front solenoid of the six-way adjuster transmission.

SHOULDER BELT GUIDE LOOP - All Front Seat - SEAT BELT GUIDE LOOP - Swivel Bucket Seat

Removal and Installation

1. Using Weatherstrip Removal Tool J-21104 or equivalent, carefully pry out plastic guide fastener from center of guide loop (see "1" in Fig. 9-7).
2. Detach the belt guide from guide escutcheon on head restraint or seat as follows:
 - a. From the front side of the guide escutcheon carefully insert a flat-bladed screwdriver between guide and escutcheon on one side of the split in the guide as shown at "2" in Figure 9-7.
 - b. Push hard on side of guide where screwdriver is inserted as indicated at "3" in Figure 9-7.
 - c. Carefully turn screwdriver as indicated at "4" in Figure 9-7 to snap guide from escutcheon.
3. To install guide, position guide retaining prongs in hole in escutcheon and push on base of guide until prongs snap into installed position. Reinstall plastic guide fastener (see "1" in Fig. 9-7). If fastener was damaged during removal, install new fastener.

SEAT ASSEMBLY - Manual and Power Operated Seats - All Styles

All seats are secured to the floor pan by adjuster-to-floor pan bolts or by nuts securing the adjusters to floor pan anchor plates or studs. The "H" body seat adjusters, except the passenger's inboard adjuster, incorporate studs which extend through the floor pan with attaching nuts on the underside of the floor pan.

Refer to appropriate illustration below for the type of seat being serviced.

1. Fig. 9-8-"A" Body Manually Operated Full Width Seat
2. Fig. 9-9-"B, C, E and X" Body Manually Operated Full Width Seat
3. Fig. 9-10-60-40, 50-50 and 40-40 Manually Operated Seat
4. Fig. 9-11-Power Horizontal (Two-Way) Full Width Seat
5. Fig. 9-12-Power Horizontal 60-40, 50-50 and 40-40 Driver's Seat
6. Fig. 9-14-Power Six-Way Full Width Seat and Adjusters ("B-C-E" Styles shown - "A" Styles Typical)
7. Fig. 9-13-Power Six-Way 60-40 Driver Seat and Adjusters - Passenger Seat Typical (50-50 and 40-40 seats typical)
8. Fig. 9-15-"A" Body Manually Operated Bucket Seat (Except Swivel Bucket)
9. Fig. 9-17-"A" Body Six-Way Bucket Seat and Adjusters ("X" Body Six-Way Bucket Typical)
10. Fig. 9-16-Swivel Bucket Seat and Adjusters
11. Fig. 9-18-"F" Body Bucket Seat and Adjusters
12. Fig. 9-19-"H" Body Bucket Seat and Adjusters - All Styles Except "11" Series
13. Fig. 9-20-"H-11" Series Bucket Seat and Adjusters
14. Fig. 9-21-"X" Body Bucket Seats and Adjusters

Removal and Installation

1. Detach the shoulder strap guide from guide escutcheon on head restraint or seat back as previously described under "Shoulder Belt Guide - Removal and Installation" (see Fig. 9-7).
2. Operate seat to full "forward" position. If six-way power seat is operable, operate seat to full "forward" and "up" positions. Where necessary to gain access to adjuster-to-floor pan attaching bolts or nuts, remove door sill plates and turn back floor mat or carpeting. On "H" body styles, all the adjuster-to-floor pan attaching nuts, except at the passenger inner adjuster, are located on underside of floor pan.
3. On full width seats where the front inner seat belts go through the seat assembly, remove the inner seat belt-to-floor pan anchor plate attach-

ing bolts. Use Door Lock Striker Lap Belt Anchor Bolt Removal Tool J-23457 or equivalent.

4. At rear of adjusters, remove adjuster-to-floor pan rear attaching nuts or bolts. Operate seat to full rearward position. Remove adjuster-to-floor pan front attaching nuts or bolts.

On seats incorporating any electrical equipment such as power adjusters, electric locks, cigar lighter, etc., tilt seat rearward and disconnect wire connector(s).

5. With aid of a helper, remove seat assembly from car.
6. Prior to installing seat assembly, check that both seat adjusters are parallel and "in phase" with each other. In the event the adjusters are "out of phase" (one adjuster reaches its maximum hori-

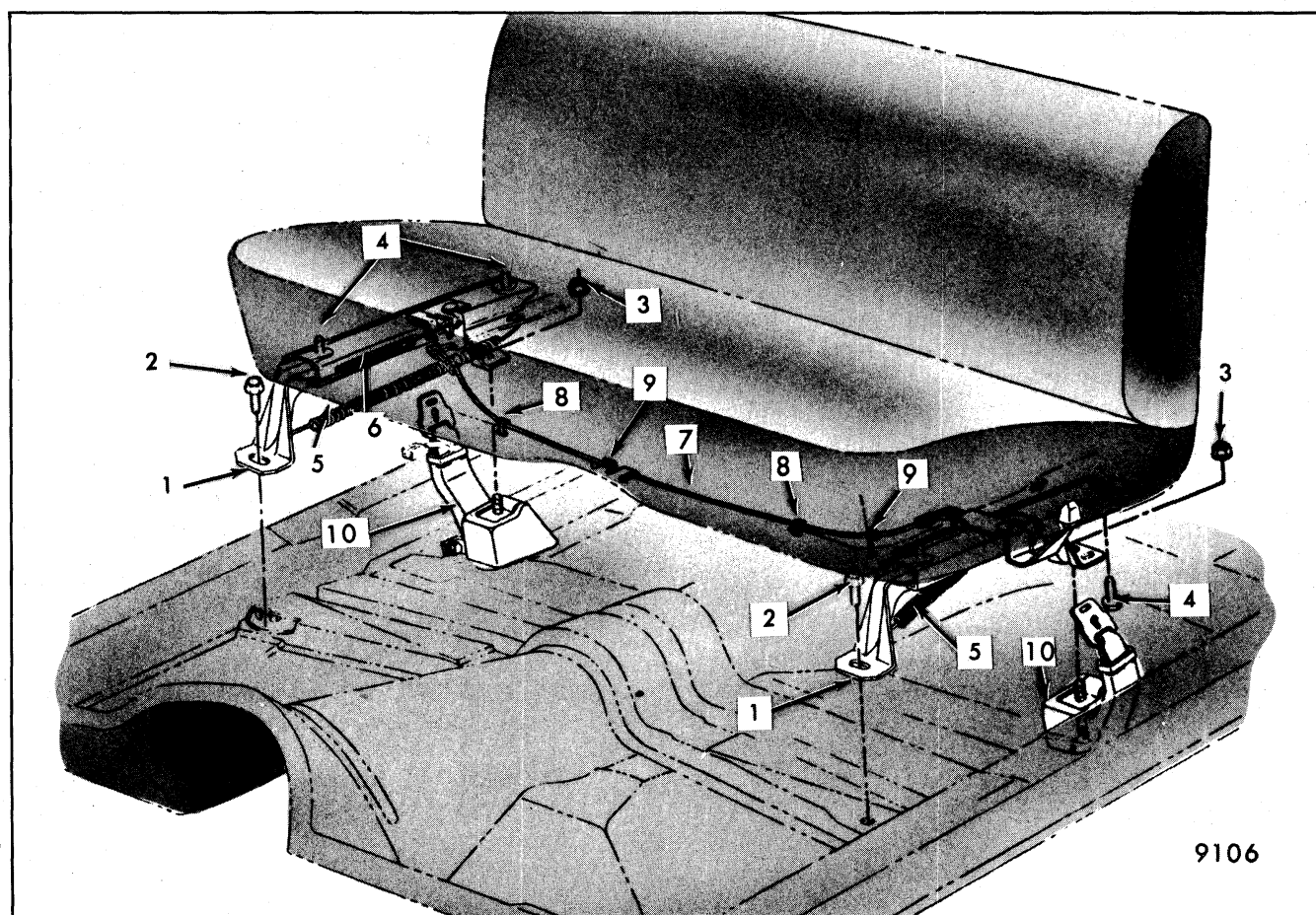


Fig. 9-8-"A" Body Manually Operated Full Width Seat and Adjusters

- | | | | |
|--|---------------------------------|--|--|
| 1. Adjuster Assembly | 4. Adjuster-to-Seat Frame Bolts | 7. Adjuster Locking Wire | 9. Locking Wire-to-Seat Frame Retainer |
| 2. Adjuster-to-Floor Pan Front Attaching Bolts | 5. Adjuster Assist Spring | 8. Locking Wire-to-Seat Frame Hog-Ring Loops | 10. Lap Belt Retractor Assembly |
| 3. Adjuster-to-Lap Belt Retractor Nuts | 6. Adjuster Lock Bar Spring | | |

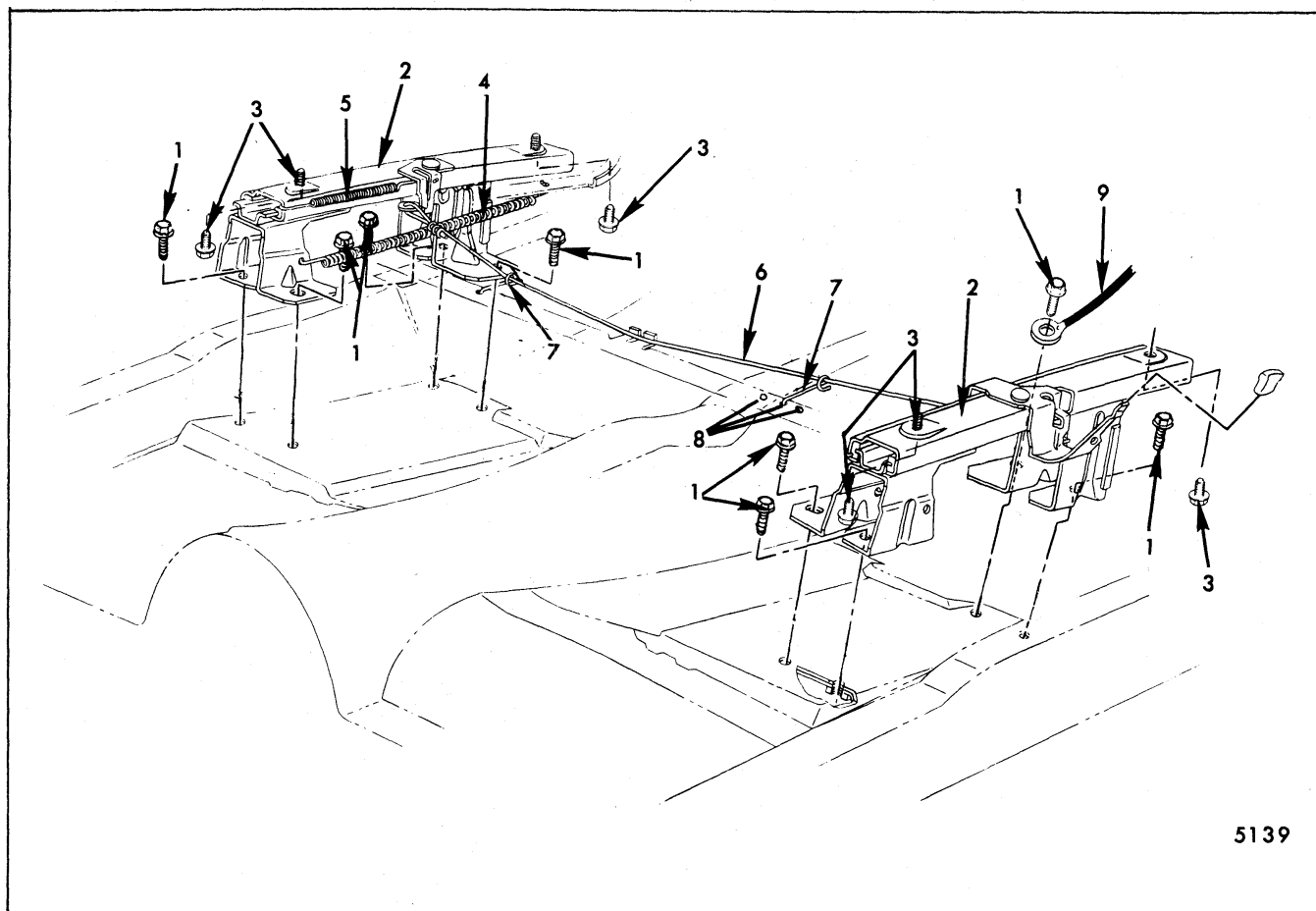


Fig. 9-9-Front Seat Adjusters - "B, C and E" Body Manually Operated Full Width Seats

- | | | | |
|---|-----------------------------|-------------------------------|--|
| 1. Adjuster-to-Floor Pan Attaching Bolts | 4. Adjuster Assist Spring | 6. Adjuster Locking Wire | 8. Tension Hook Adjusting Holes in Seat Frame |
| 2. Adjuster Assembly | 5. Adjuster Lock Bar Spring | 7. Locking Wire Tension Hooks | 9. Ground Strap on Seats with Electric Equipment |
| 3. Adjuster-to-Seat Frame Attaching Bolts | | | |

zontal or vertical travel in a given direction before the other adjuster), phase adjusters as described in step 5 under "Front Seat Adjuster Assembly - Removal and Installation".

7. To install seat assembly, reverse removal procedure.

NOTE: Tighten seat adjuster to floor pan attaching bolts or nuts 12 to 18 foot-pounds. On seats where inner lap belts have been detached from floor pan, tighten lap belt anchor bolts 35 to 45 foot-pounds. Check operation of seat assembly to full limits of travel. On two-door styles equipped with electric seat back locks check operation of both seat back locks.

FRONT SEAT ADJUSTER ASSEMBLY - Manual and Power Operated - All Styles (Except Swivel Bucket)

Refer to appropriate illustrations below for the type of seat being serviced.

1. Fig. 9-8-"A" Body Manually Operated Full Width Seat and Adjusters
2. Fig. 9-9-"B, C, E" and "X" Body Manually Operated Seat Adjusters
3. Fig. 9-10-60-40, 50-50 and 40-40 Manually Operated Seat Adjusters

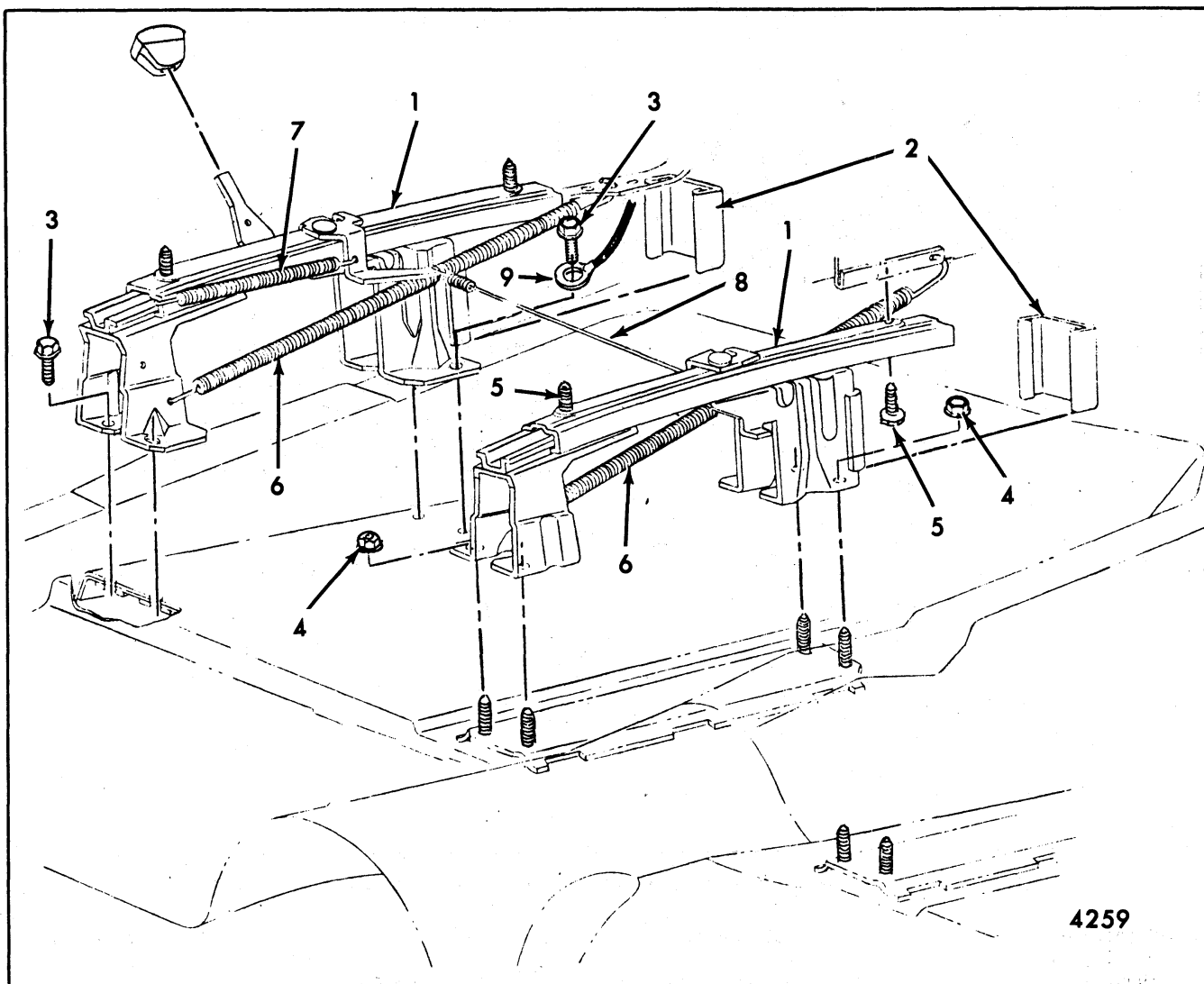


Fig. 9-10-60-40, 50-50 and 40-40 Manual Adjusters (60-40 Passenger Side Shown - Driver's Seat 50-50 and 40-40 Seats Typical)

- | | | | |
|--------------------------------------|-------------------------------------|-----------------------------|--|
| 1. Adjuster Assembly | 4. Inner Adjuster-to-Floor Pan Nuts | 6. Adjuster Assist Spring | 8. Adjuster Locking Wire |
| 2. Adjuster Rear Pedestal Covers | 5. Adjuster-to-Seat Frame Bolts | 7. Adjuster Lock Bar Spring | 9. Ground Strap on Seats with Electric Equipment |
| 3. Outer Adjuster-to-Floor Pan Bolts | | | |
-
- | | |
|---|--|
| 4. Fig. 9-11-Power Operated Horizontal (Two-Way) Full Width Seat Adjusters | 8. Fig. 9-22-"A" Body Manually Operated Bucket Seat Adjusters (Except Swivel Bucket) |
| 5. Fig. 9-12-Power Operated Horizontal (Two-Way) 60-40, 50-50 Seat | 9. Fig. 9-17-"A" Body Six-Way Seat and Adjusters |
| 6. Fig. 9-14-Power Operated Six-Way Full Width Seat and Adjusters "B-C-E" Styles | 10. Fig. 9-18-"F" Body Bucket Seats and Adjusters |
| 7. Fig. 9-13-Power Operated Six-Way 60-40, 50-50 and 40-40 Driver's Seat and Adjusters - Passenger Seat Typical | 11. Fig. 9-19-"H" Body Bucket Seats and Adjusters - All Except "11" Series |
| | 12. Fig. 9-20-"H" Body "11" Series Bucket Seats and Adjusters |
| | 13. Fig. 9-21-"X" Body Bucket Seats and Adjusters |

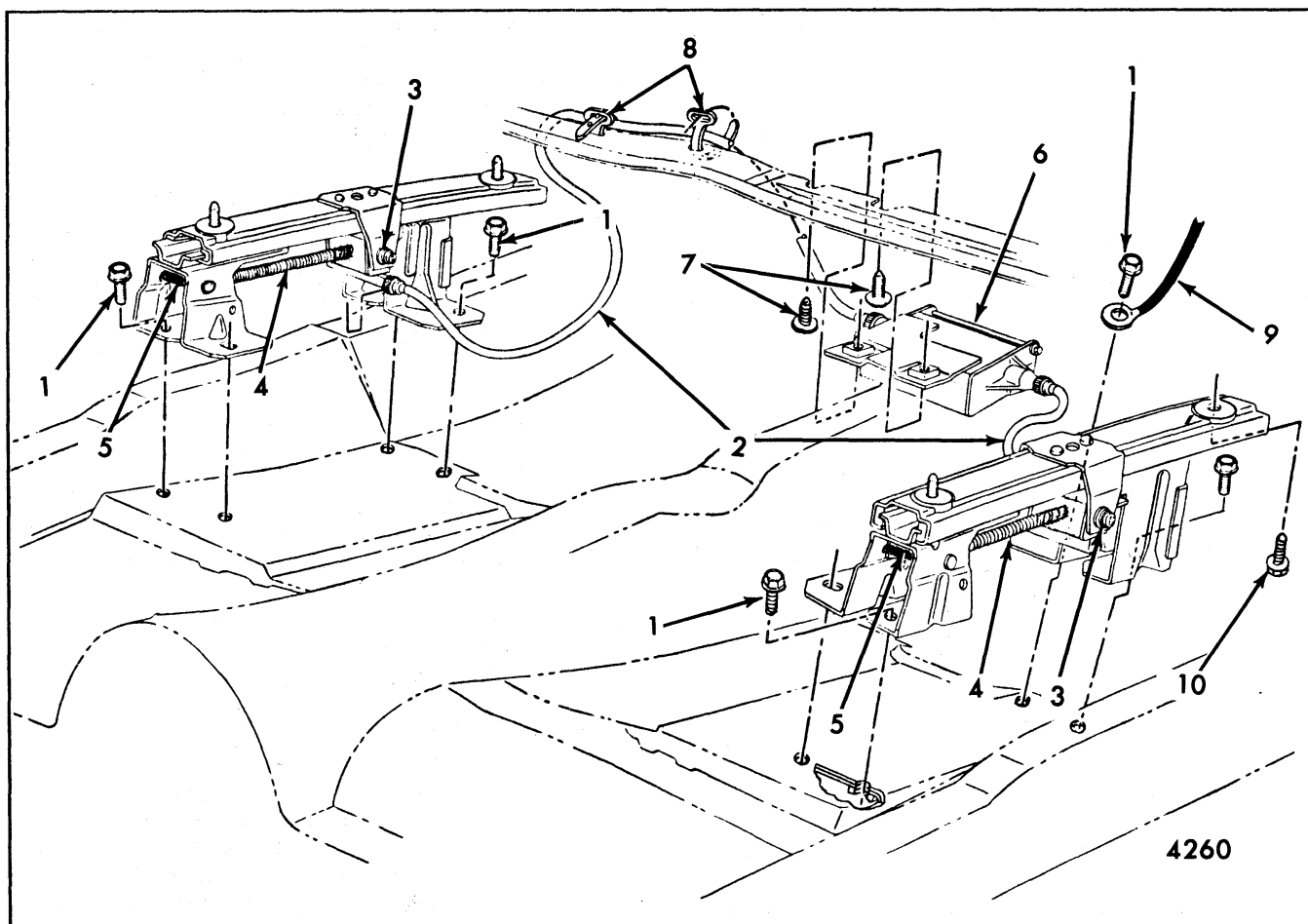


Fig. 9-11-Front Seat Adjusters - Power Operated Horizontal Seat and Adjusters

- | | | | |
|---|---|---|--|
| 1. Seat Adjuster-to-Floor Pan Attaching Bolts | 3. Adjuster Horizontal Gear Nut and Shoulder Screws | 6. Electric Motor | 9. Seat Frame-to-Adjuster Ground Strap |
| 2. Horizontal Drive Cables | 4. Adjuster Jackscrew | 7. Motor-to-Seat Frame Attaching Screws | 10. Adjuster-to-Seat Frame Attaching Bolts |
| | 5. Jackscrew Support Pin | 8. Horizontal Drive Cable Straps | |

14. Fig. 9-23-Power Operated Four-Way Seat Adjusters - Used Only on 50-50 Passenger Seat Equipped with Power Operated Reclining Seat Back
15. Fig. 9-24-Wire Harness Routing for Power Operated Four-Way 50- 50 Passenger Seat with Power Operated Reclining Seat Back

removed. Squeeze hooked end of seat adjuster locking wire together and slide retaining spring back over hump in locking wire and remove locking wire from adjuster.

3. On power operated full width seats, disconnect drive cables at adjuster being removed, squeeze oblong connector to detach. On power operated 60-40, 50-50, 40-40 or bucket seats remove bolt securing motor and transmission support to adjuster being removed (see Fig. 9-23).

Removal and Installation

1. Remove front seat assembly with adjusters attached as previously described and place upside-down on a clean protected surface.
2. On manually operated seat adjusters remove seat adjuster assist spring from adjuster being removed.
3. On power operated full width seats, disconnect drive cables at adjuster being removed, squeeze oblong connector to detach. On power operated 60-40, 50-50, 40-40 or bucket seats remove bolt securing motor and transmission support to adjuster being removed (see Fig. 9-23).
4. Remove adjuster-to-seat bottom frame front and rear attaching bolts and remove seat adjuster from seat.
5. To install, reverse removal procedure. If a manual adjuster with control arm is being re-

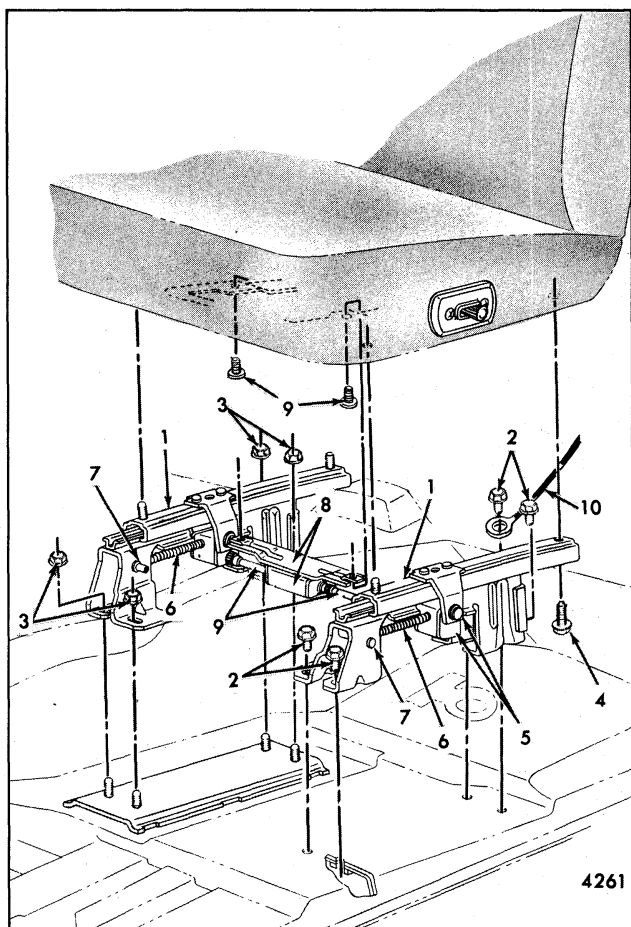


Fig. 9-12-Power Operated Horizontal Seat and Adjusters - 60-40, 50-50 and 40-40 Seats

- | | |
|---|---|
| 1. Adjuster Assembly | 6. Adjuster Jackscrew |
| 2. Adjuster-to-Floor Pan Attaching Bolts | 7. Jackscrew Support Pin |
| 3. Adjuster-to-Floor Pan Attaching Nuts | 8. Electric Motor and Support |
| 4. Adjuster-to-Seat Frame Attaching Bolts | 9. Motor Support-to-Seat Frame Attaching Screws |
| 5. Adjuster Horizontal Gear Nut and Attaching Screw | 10. Seat Frame-to-Adjuster Ground Strap |

placed, install new adjuster control knob as described under "Manually Operated Seat Adjuster Control Arm Knob".

NOTE: When installing manually operated seat adjusters the right and left seat adjuster sliding mechanism should be in same relative position when attaching adjuster to seat bottom frame. Tighten seat adjuster-to-seat frame attaching bolts 12 to 18 foot-pounds.

After installing adjuster to seat frame, check operation of adjusters. If on full width seats the adjusters

do not lock or unlock satisfactorily when control handle is operated, disengage locking wire retainer from hole in seat bottom frame and engage retainer in one of adjacent holes to obtain proper tension in wire (see Fig. 9-8 or 9-9).

When installing power operated seat adjusters, check that both adjusters are parallel and "in phase" with each other. In the event the adjusters are "out of phase" (one adjuster reaches its maximum horizontal or vertical travel in a given direction before the other adjuster), phase adjusters as follows:

1. Horizontal travel - operate seat control switch until one adjuster reaches full forward position. Detach horizontal drive cable from adjuster which has reached full forward position. Operate seat forward until other adjuster reaches full forward position; then connect horizontal drive cable and check horizontal travel of seat.
2. Front or rear vertical travel - operate seat control switch until one adjuster has reached fully raised position at both front and rear vertical travel limits. Disconnect both front and rear vertical drive cables from adjuster which has reached the fully raised position. Operate seat control switch until other adjuster reaches the fully raised position at both front and rear vertical travel limits; then connect previously removed front and rear vertical drive cables. Check vertical travel by operating adjusters through one or two complete cycles. The above operation may be repeated on an "as required" basis if adjusters do not appear to be "in phase" after test cycle.

CAUTION: The seat adjuster-to-seat frame attaching bolts are important attaching parts in that it/they could affect the performance of vital components and systems. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

SWIVEL SHELL BUCKET SEAT, ADJUSTER PLASTIC COVER, SWIVEL ASSEMBLY AND SEAT ADJUSTER

Both the driver and passenger swivel shell bucket seat assembly consist of a formed high impact plastic shell bucket seat mounted on a swivel mechanism which can be turned approximately ninety degrees

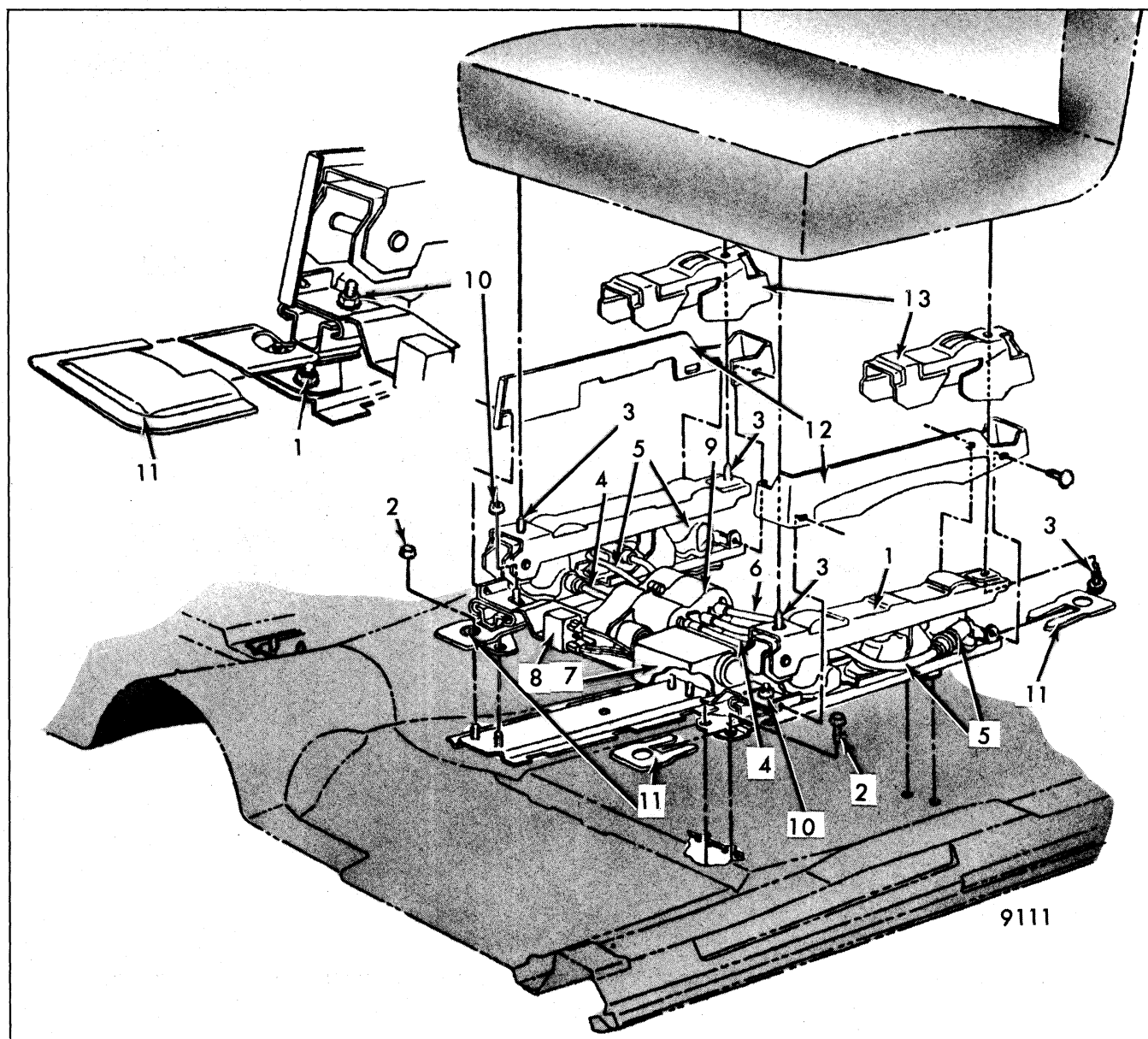


Fig. 9-13-60-40, 50-50, 40-40 Driver's Seat and Six-Way Power Adjusters (60-40 Driver's Seat Shown - Passenger Seat, 50-50 and 40-40 Seats Typical)

- | | | | |
|---|---|---|--|
| 1. Adjuster Assembly | A. 60-40, 50-50 and 40-40 Seats - Yellow | E. Bucket Seat-Passenger's Outboard Side - Blue | 10. Motor and Transmission Support Nuts |
| 2. Adjuster-to-Floor Pan Bolts and Nuts | B. Bucket Seat-Driver's Inboard Side - Blue | 6. Horizontal Actuator and Drive Cables (Black) | 11. Carpet Retainers |
| 3. Adjuster-to-Seat Frame Bolts | C. Bucket Seat-Driver's Outboard Side - Green | 7. Electric Motor Assembly | 12. Seat Adjuster Lower Track Cover |
| 4. Front Vertical Gear Nut and Drive Cables (Black) | D. Bucket Seat-Passenger's Inboard Side - Green | 8. Motor Control Relay | 13. Seat Adjuster Upper Rear Track Cover |
| 5. Rear Vertical Gear Nut and Drive Cables | | 9. Transmission Assembly | |

towards the door opening for easier entrance and exit from the body. The swivel mechanism is mounted on standard manually operated bucket seat adjusters both of which are covered by a one piece formed

plastic cover installed between the shell bucket and swivel mechanism.

To remove and install one or more of these assemblies proceed in the following sequence.

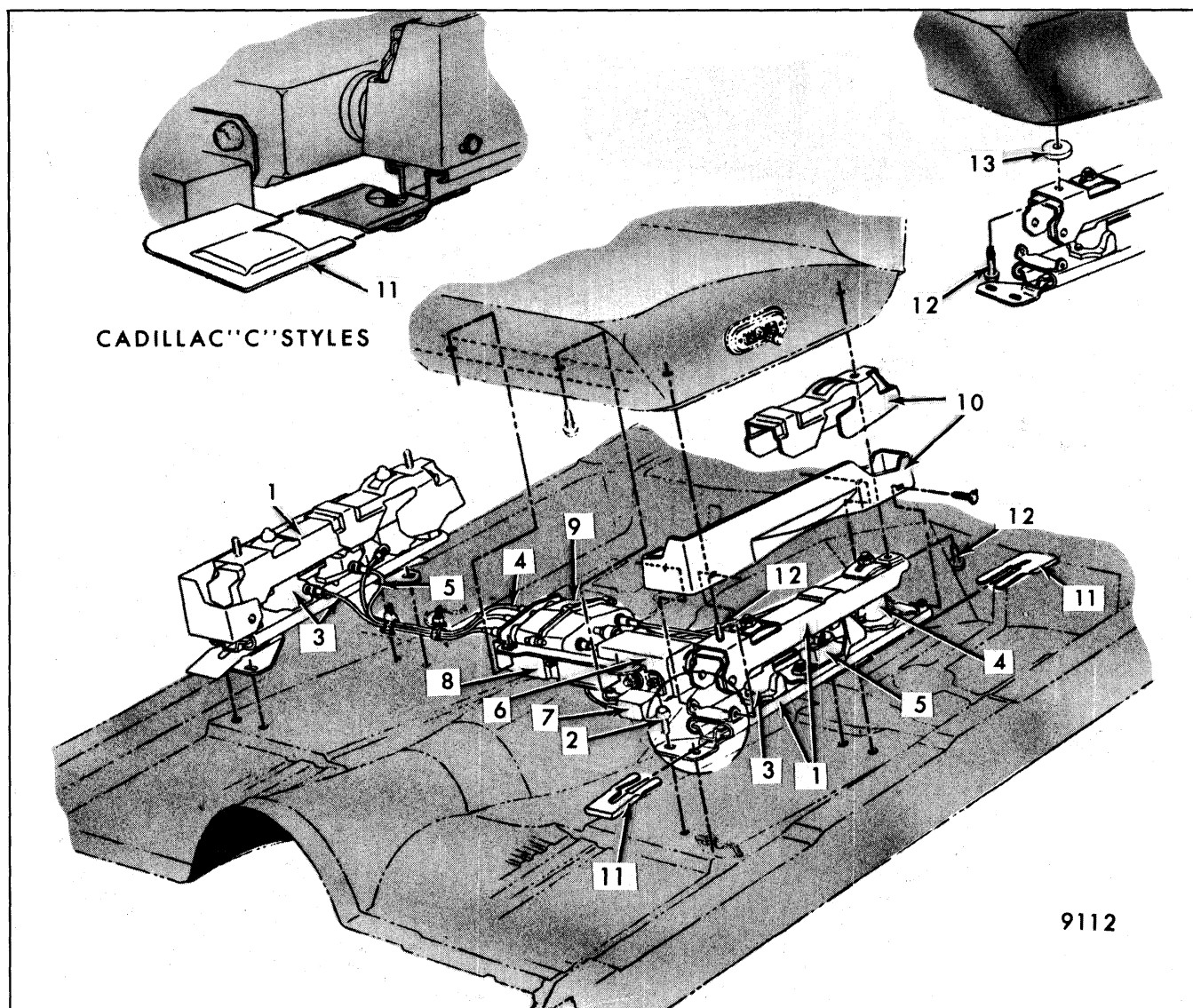


Fig. 9-14-Power Six-Way Full Width Seat and Adjusters ("B-C-E" Body Shown "A" Body Typical)

- | | | | |
|---|---|---|---|
| 1. Adjuster Assembly | 5. Horizontal Actuator and Drive Cables (Black) | 8. Motor and Transmission Support | 11. Front and Rear Carpet Retainers |
| 2. Adjuster-to-Floor Pan Bolts and Nuts | 6. Electric Motor Assembly | 9. Transmission Assembly | 12. Adjusters-to-Seat Frame Bolts |
| 3. Front Vertical Gear Nut and Drive Cables (Red) | 7. Motor Control Relay | 10. Adjuster Track Covers - Lower and Upper | 13. Seat Adjuster-to-Front of Seat Frame Spacer (Buick "C" Styles only) |
| 4. Rear Vertical Gear Nut and Drive Cables (Blue) | | | |

Removal and Installation

Refer to Fig. 9-25 Swivel Shell Bucket Seat, Swivel and Adjuster Cover, Swivel Assembly and Adjuster Assembly.

1. Remove front seat assembly as described under "Front Seat Assembly - Removal and Installation" and place upside-down on a clean protected surface.
2. With swivel mechanism in forward position remove four bolts, through access holes in bottom of swivel assembly (Fig. 9-25, Item 4), securing seat to swivel assembly; then remove seat from swivel.
3. Remove swivel and adjuster plastic cover attaching screws (Fig. 9-25, Item 1).
4. Raise inboard side of cover up sufficiently to

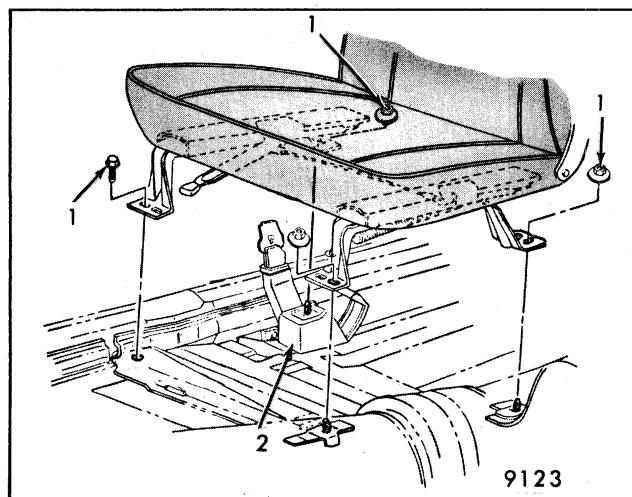


Fig. 9-15-"A" Body Manually Operated Bucket Seats, Except Swivel and "F" Body Buckets (Passenger Side Shown - Driver's Side Typical)

1. Adjuster-to-Floor Pan Bolts and Nuts
2. Lap Belt Retractor

start slot in cover over base of swivel control knob; then rotate cover rearward sufficiently (approximately 90 degrees) to pull slot in cover over and off wide portion of control knob (Fig. 9-25, Item 3).

5. Turn swivel and adjuster assembly upside-down.
 - a. If removing adjuster assembly from swivel assembly, disengage all springs and control wire from adjuster being removed (see Fig. 9-25).
 - b. If removing swivel assembly from adjusters, disengage right side adjuster control arm spring and lock bar spring from swivel base plate (Fig. 9-25, Items 5 and 8).
6. Turn swivel and adjuster assembly right side up.
 - a. If removing adjuster assembly, remove two swivel-to- adjuster attaching nuts (Fig. 9-25, Item 1) and remove adjuster assembly.
 - b. If removing swivel assembly, remove all four swivel-to-adjuster attaching nuts (Fig. 9-25, Item 1) and remove swivel assembly from adjusters.
7. To install adjuster swivel assembly, adjuster plastic cover or shell bucket seat, reverse removal procedure. If adjuster with lock control lever is being replaced, remove control lever knob from original adjuster and install on new adjuster or install a new knob as described under "Manually Operated Seat Adjuster Control Arm Knob".

NOTE: The right and left seat adjuster sliding mechanism should be in same relative position when attaching adjuster to seat bottom frame; tighten seat adjuster-to-seat frame attaching bolts 12 to 18 foot-pounds.

POWER OPERATED TWO-WAY SEAT ADJUSTER MAJOR COMPONENTS

The following service procedures cover replacement of the major component parts of the power operated two-way seat adjusters.

ELECTRIC MOTOR - Power Operated Two-Way Seat

Removal and Installation

1. If seat is operable, operate seat to a midway position.
2. Remove front seat adjuster-to-floor pan attaching bolts and tilt seat rearward.
3. On full width seat disconnect both power drive cables from motor. On 60-40 driver's seat, detach one seat adjuster from seat bottom frame; then disengage drive cable from motor on that side.
4. Disconnect feed wire harness from actuator motor.
5. Remove screws that secure motor support to seat bottom frame and remove motor with attached support from seat frame (Figs. 9-11 and 9-12).
6. Remove screws securing motor to motor support bracket and remove motor assembly (Figs. 9-11 and 9-12).
7. To install, reverse removal procedure. Check for proper seat operation to extreme limits of travel.

HORIZONTAL JACKSCREW AND/OR GEARNUT ASSEMBLY - Power Operated Two-Way Seats

Removal and Installation - Refer To Fig. 9-26

1. Remove front seat assembly with adjusters attached and place upside-down on a clean, protected surface.

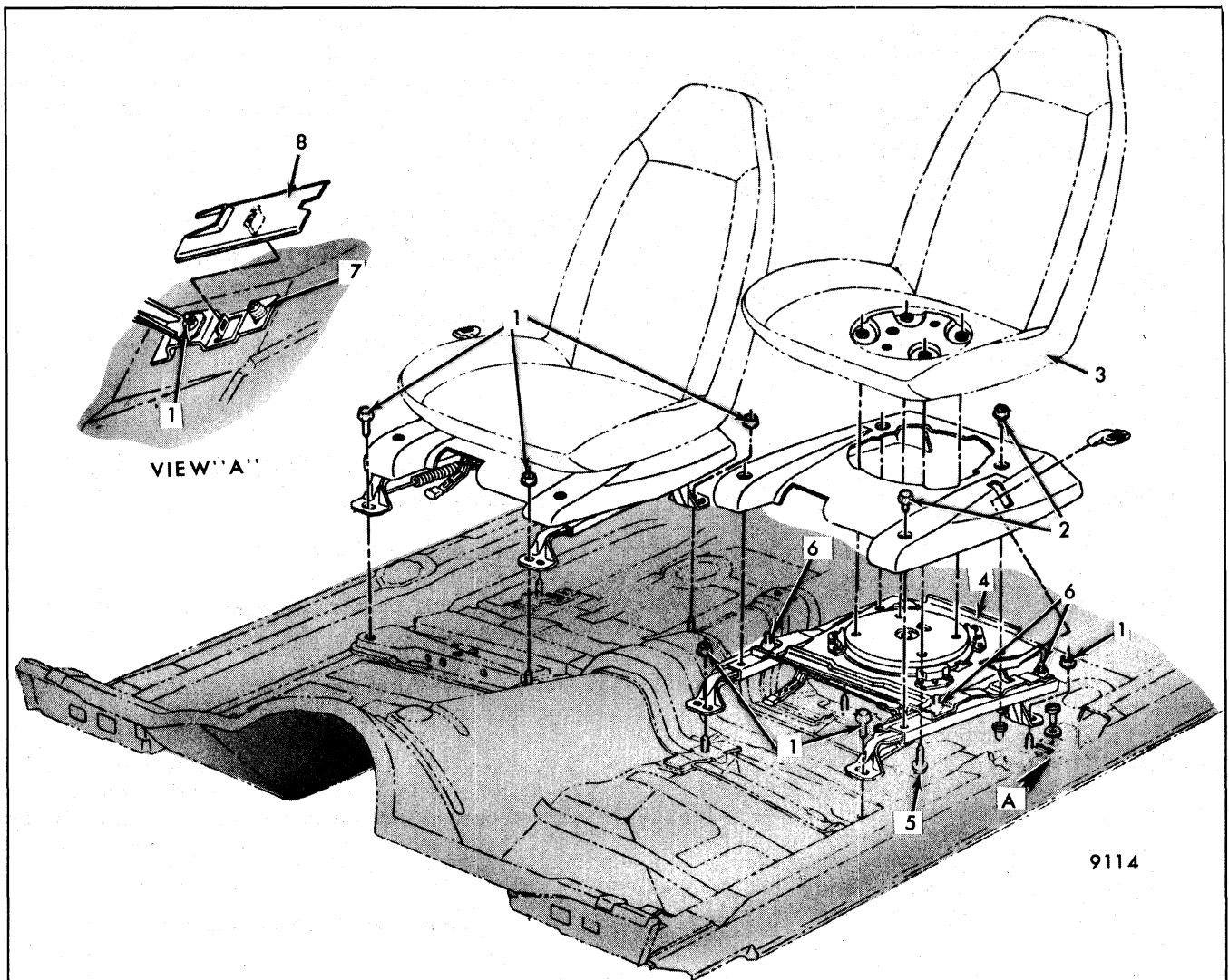


Fig. 9-16-Swivel Bucket Seat and Adjusters

- | | | | |
|---|---|---|---|
| 1. Adjuster and Swivel Assembly-to-Floor Pan Attaching Bolts and Nuts | 2. Swivel and Adjuster Cover Attaching Screws | 5. Bucket Seat Shell-to-Swivel Assembly Attaching Bolts | 7. Outer Adjuster Rear Anchor Plate Bolt and Washer |
| | 3. Bucket Seat Shell | 6. Swivel Assembly-to-Adjuster Attaching Nuts | 8. Carpet Cut-Out Cover at Outer Adjuster Rear Anchor Plate |
| | 4. Swivel Assembly | | |

NOTE: Adjusters should be in a rearward position. If adjuster from which jackscrew or gearnut is being removed is not in a rearward position, operate gearnut manually with a small screwdriver to move rearward.

2. Detach power drive cable from gearnut to be removed.
3. Remove retainer securing jackscrew front support crosspin to adjuster front pedestal and remove crosspin.
4. With adjuster upper channel in a rearward position slide upper channel forward until jackscrew front support is out from between adjuster front pedestals; then unscrew jackscrew out of gearnut.
5. As a bench operation, unscrew jackscrew front support locknut; then remove spacers and support from jackscrew.
6. To remove gearnut, remove two shoulder screws (use clutch type screwdriver) securing gearnut to support and remove gearnut from support.

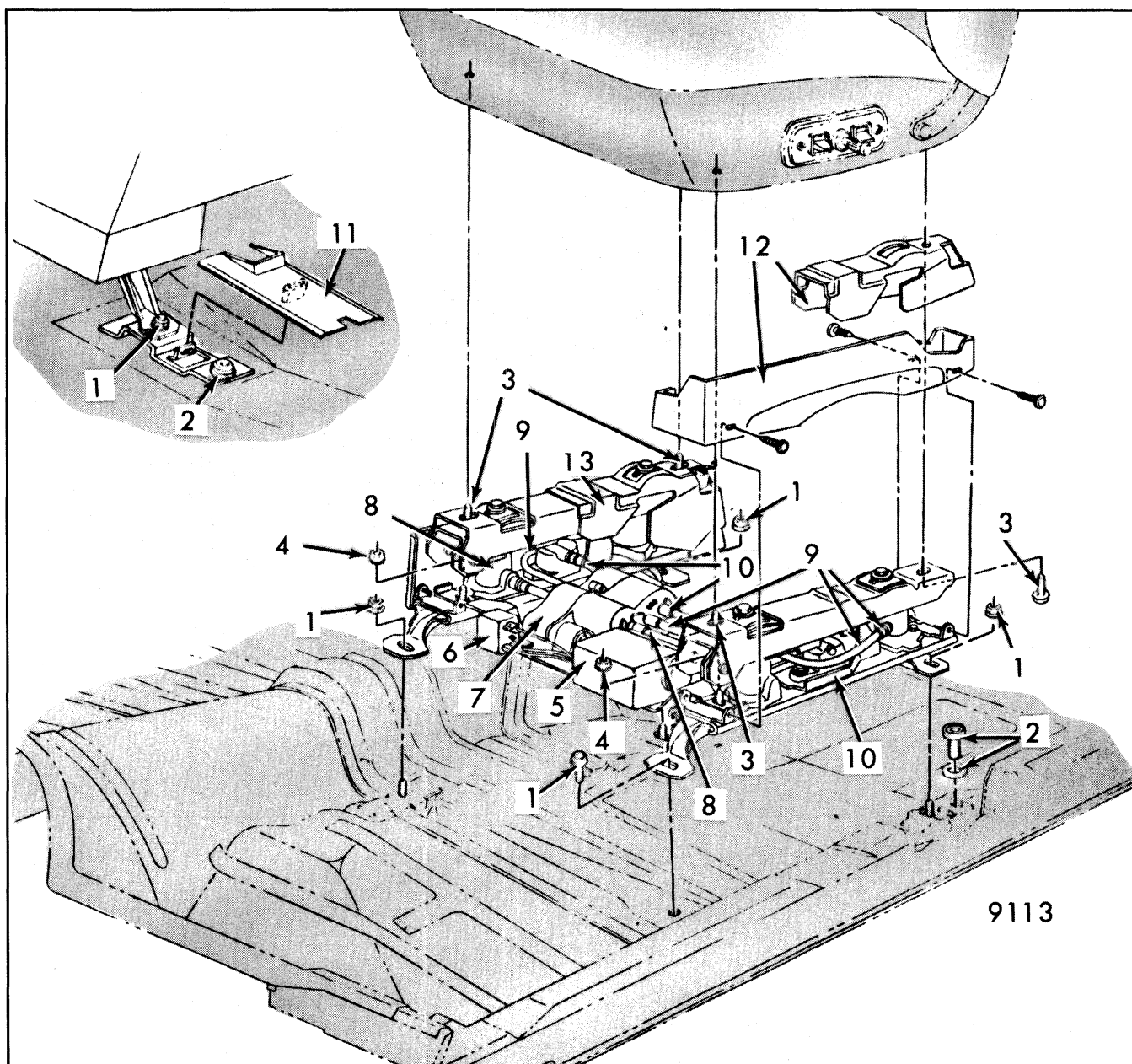


Fig. 9-17-"A" Body Six-Way Power Operated Driver's Bucket Seat and Adjusters

- | | | | |
|---|---|---|---|
| 1. Adjuster-to-Floor Pan Nuts and Bolts | 5. Electric Motor Assembly | 9. Rear Vertical Gear Nut and Drive Cable (Outboard Side - Green, Inboard Side - Black) | 12. Seat Adjuster Track Lower and Upper Cover (Outer Side Only) |
| 2. Rear Outer Anchor Plate Bolt and Washer (Driver's Side Only) | 6. Motor Control Relay | 10. Horizontal Actuator and Drive Cable - Black | 13. Inner Seat Adjuster Track Upper Deflector Cover |
| 3. Adjuster-to-Seat Frame Attaching Bolts | 7. Transmission Assembly | 11. Carpet Cover at Seat Adjuster Outer Rear Opening | |
| 4. Motor and Transmission Support-to-Adjuster Attaching Nuts | 8. Front Vertical Gear Nut and Drive Cable (Outboard Side - Green, Inboard Side - Blue) | | |

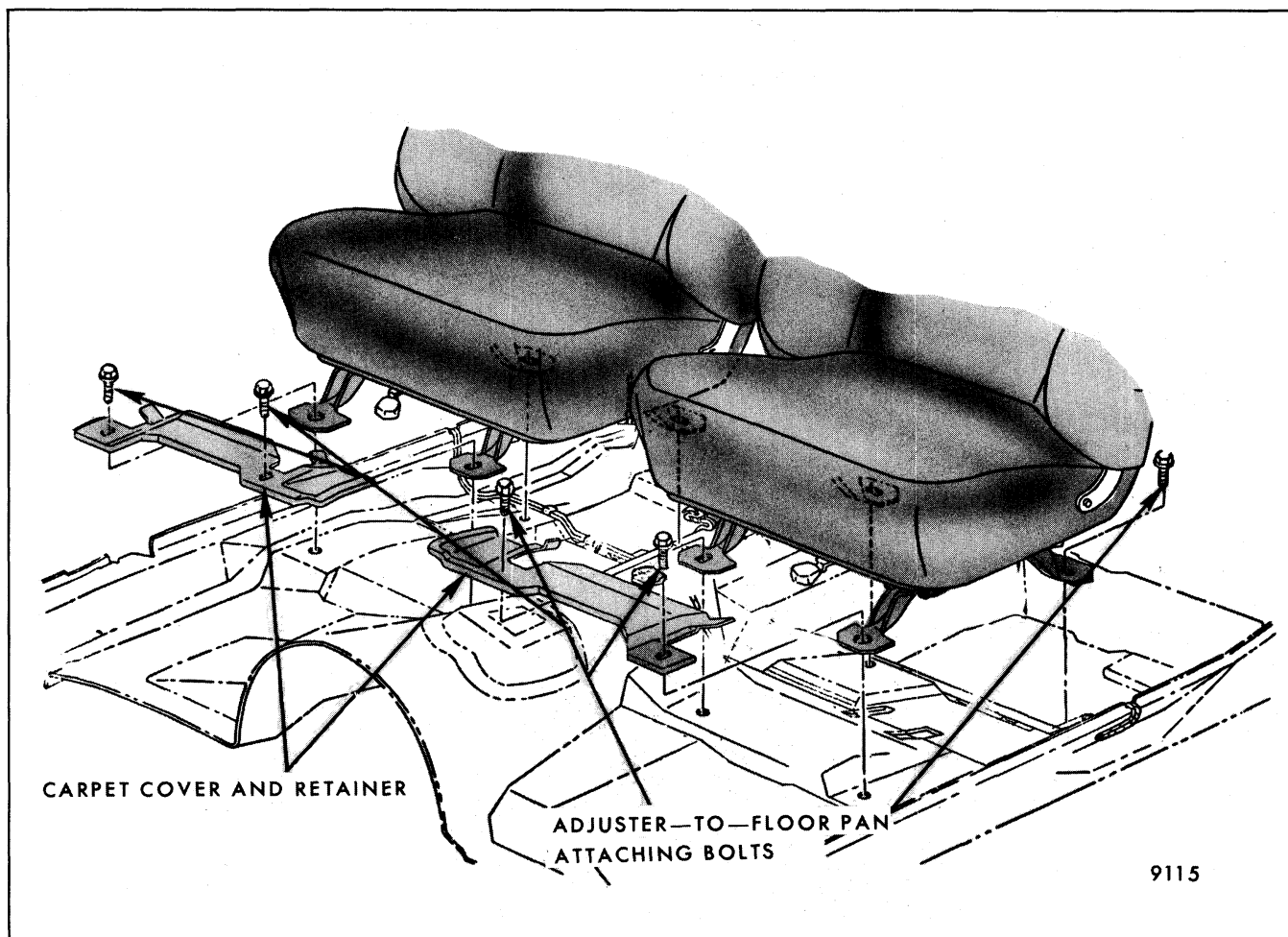


Fig. 9-18-"F" Body Bucket Seats - and Adjusters

7. To install, reverse removal procedure. Prior to installing seat assembly in body, be sure adjusters are "in phase". See step 5 under "Front Seat Assembly - Removal and Installation".

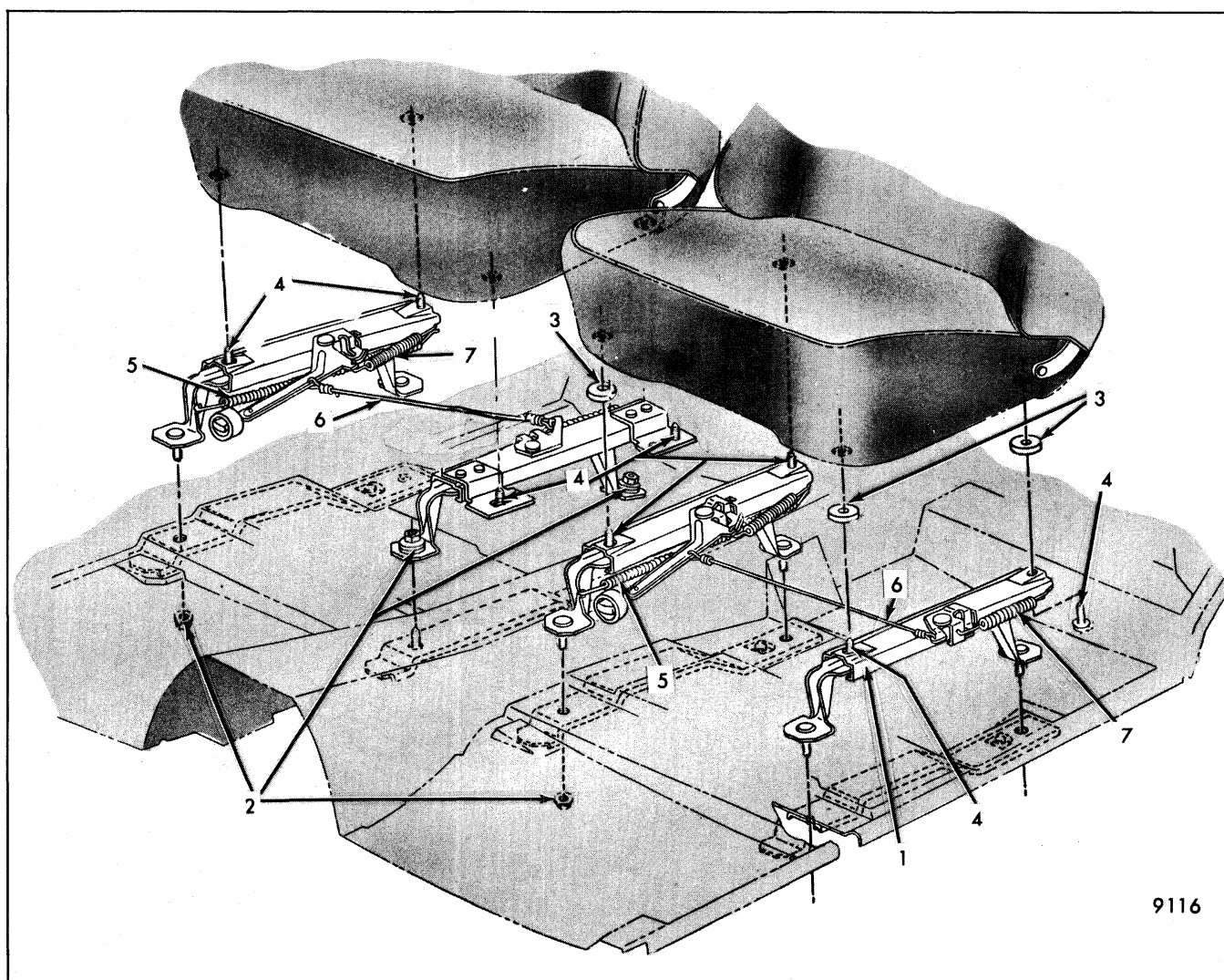
PLASTIC SLIDES - Power Two-Way Seat Adjusters

Removal and Installation

1. Remove front seat adjuster to be serviced from front seat assembly. (See "Front Seat Adjuster Assembly - Removal and Installation" procedures.)
2. Using a suitable tool (preferably a "clutch" type screwdriver or equivalent), remove two shoulder screws (clutch type) securing gearnut to upper channel to seat adjuster assembly (Fig. 9-26).
3. Slide lower track and support base portion of seat adjuster, with attached jackscrew and gearnut, forward until it disengages from upper channel assembly. The four plastic slides may now be disengaged from positioning slots on lower track.
4. To install, reverse removal procedure making sure that groove in plastic slide slips onto lower track with thinner section of slide protruding above surface of track.

SIX-WAY AND FOUR-WAY SEAT ADJUSTER MAJOR COMPONENTS

The following service procedures cover replacement of the major component parts of the power operated six-way and four-way seat adjusters.



9116

Fig. 9-19 "H" Body Bucket Seats and Adjusters - All Except "11" Series

- | | | |
|--|--|-----------------------------|
| 1. Seat Adjusters | 3. Adjuster-to-Seat Frame Spacers - Driver's Seat Only | 5. Adjuster Assist Spring |
| 2. Adjuster-to-Floor Pan Attaching Nuts - Located Under Floor Pan Except for Passenger Seat Inner Adjuster | 4. Adjuster-to-Seat Frame Attaching Bolts | 6. Adjuster Locking Wire |
| | | 7. Adjuster Lock Bar Spring |

ELECTRIC MOTOR

Removal and Installation

1. Remove front seat assembly as previously described and place upside-down on a clean, protected surface.
2. Disconnect motor feed wires from motor control relay (Figs. 9-14 and 9-13).
3. On full width seats remove motor and transmission support-to-seat frame attaching bolts (Figs. 9-14 and 9-13).
4. Remove motor-to-support attaching screws; then move motor assembly outboard (away from transmission) sufficiently to disengage motor from rubber coupling.
5. To install, reverse removal procedure making sure rubber coupling is properly engaged at both motor and transmission. Check that seat harness is properly secured to seat. Check operation of seat to full limits of travel.

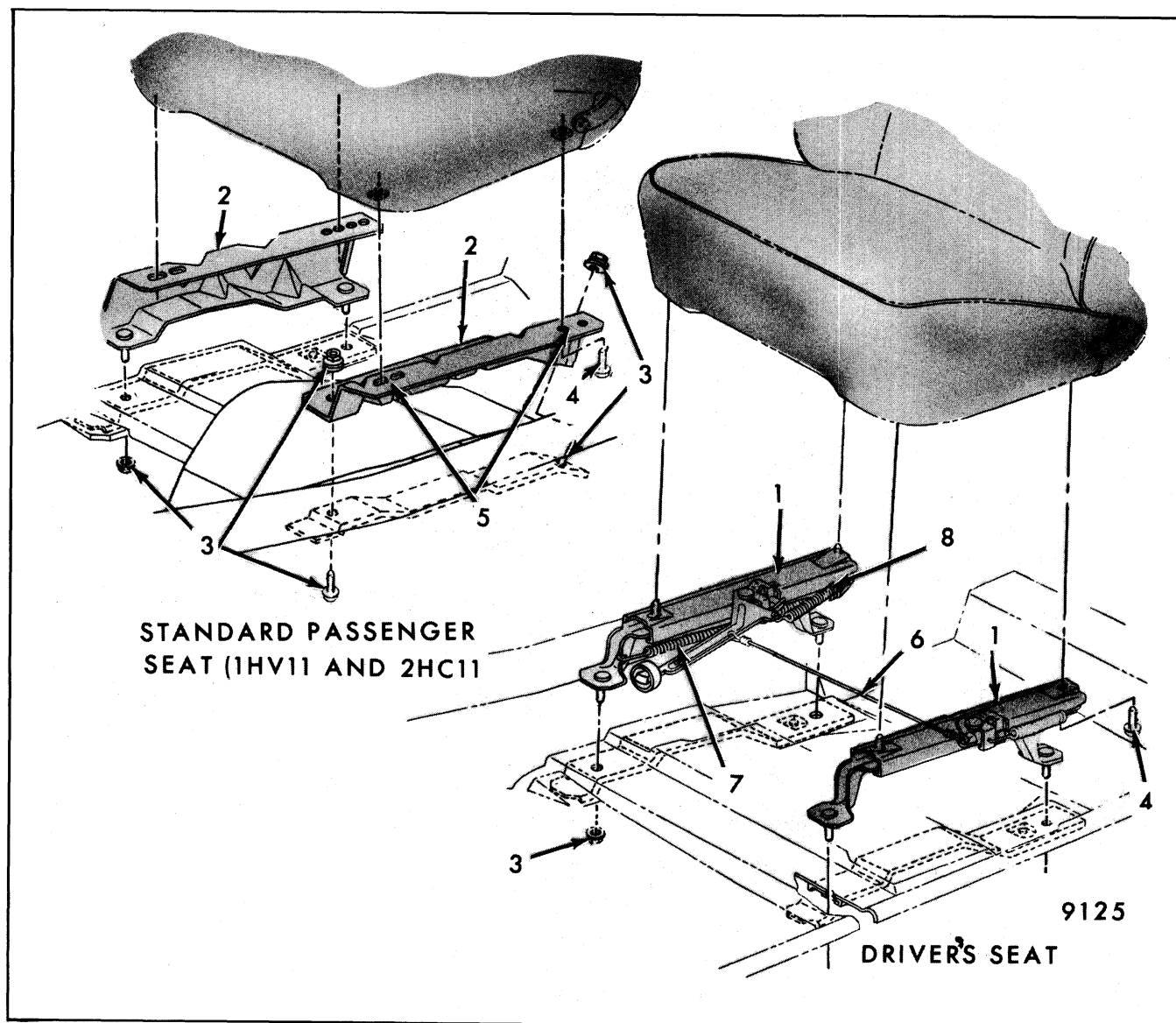


Fig. 9-20 "H" Body "11" Series Bucket Seats and Adjusters

- | | | |
|--|--|---|
| 1. Seat Adjusters - Driver's Side | 4. Adjuster on Support-to-Seat Frame Attaching Bolts | 6. Driver's Seat Adjuster Locking Wire |
| 2. Seat Supports - Passenger Side | 5. Holes for Dealer Relocation of Passenger Seat on Supports | 7. Driver's Seat Adjuster Assist Spring |
| 3. Adjuster-to-Floor Pan Attaching Nuts - Located under Floor Pan Except for Passenger Seat Inner Adjuster | | 8. Driver's Seat Adjuster Lock Bar Spring |

HORIZONTAL ACTUATOR - Six-Way and Four-Way Seat Adjusters

Removal and Installation

Refer to Figures 9-27 and 9-28 for six-way adjusters and 9-29 for four-way adjusters.

1. Remove seat assembly from body as previously described and place upside-down on a clean, protected surface. Remove affected adjuster assembly from seat as previously described.
2. At top of adjuster remove front and rear vertical gearnut attaching nut and tension spring.

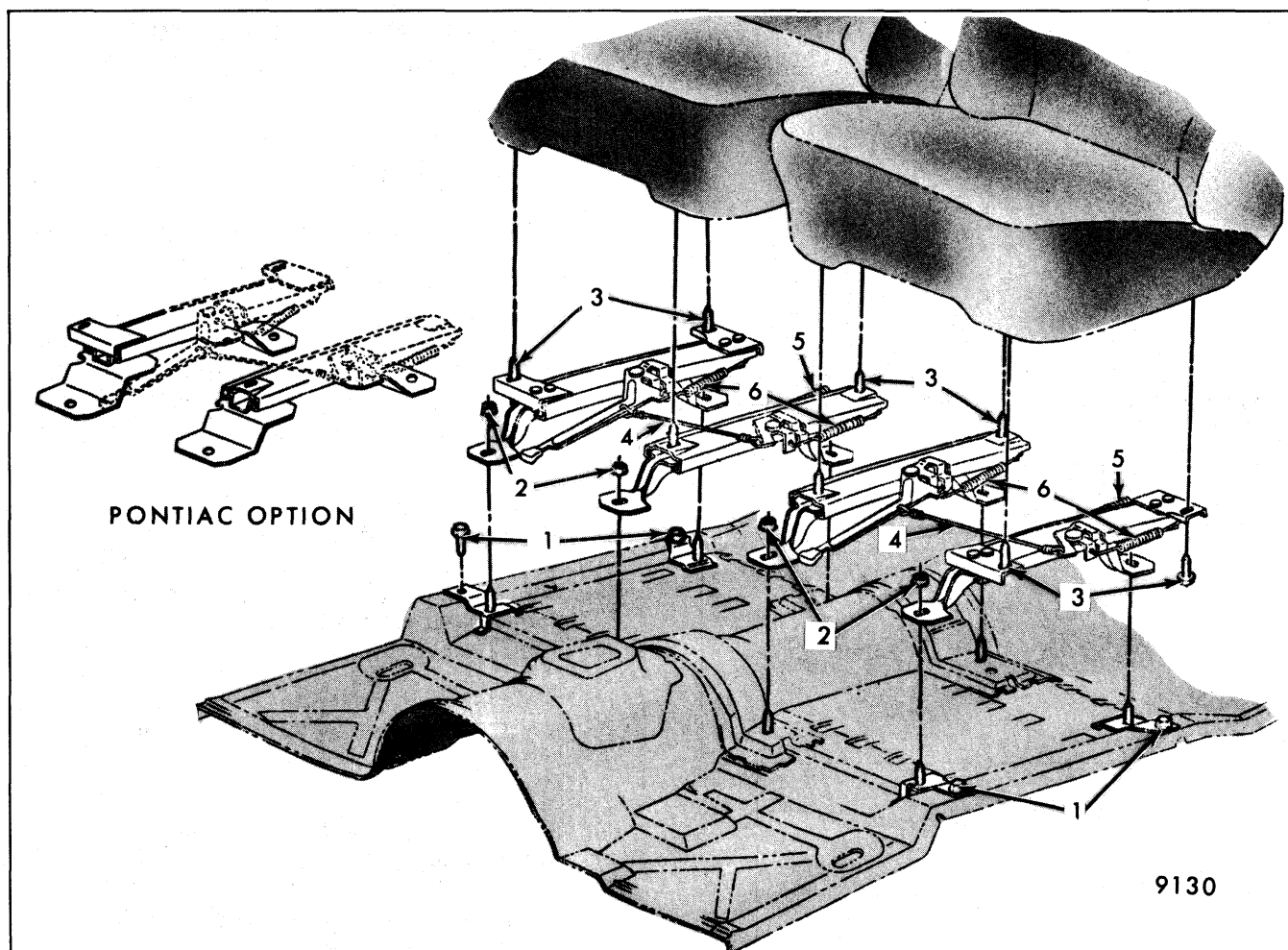


Fig. 9-21 "X" Body Bucket Seats and Adjusters

- | | | | |
|---|--|---|---------------------------------------|
| 1. Outer Adjuster
Anchor Plate-to-Floor
Pan Bolts | 2. Adjuster-to-Floor Pan
Anchor Plate
Attaching Nuts | 3. Adjuster-to-Seat
Frame Attaching
Bolts | 4. Adjuster Auxiliary
Locking Wire |
| | | | 5. Adjuster Assist
Spring |
| | | | 6. Locking Bar Spring |

3. Lift front of adjuster upper channel upward on six-way adjusters or rear of upper channel on four-way adjusters; then remove screws securing horizontal actuator to adjuster upper channel assembly and remove actuator from adjuster.

4. To install, reverse removal procedure. When installing horizontal actuator, be sure actuator drive gear is fully engaged with teeth on lower channel. With actuator attaching screws tight, there should be no free motion between upper and lower adjusting channels. Adjust actuator "as required" until all free motion between channels has been removed (see "Power Six-Way Seat Adjuster Horizontal Actuator Adjustment" under Front Seat Adjustments). Be sure seat adjusters are "in phase" before installing seat assembly into body. See step 5 under "Front

Seat Adjuster Assembly - Removal and Installation".

FRONT AND/OR REAR VERTICAL GEARNU - Six-Way and Four-Way Seat Adjusters

Removal and Installation

Refer to Figures 9-27 and 9-28 for six-way adjusters and 9-29 for four-way adjusters.

1. Operate seat to full forward position.
2. Remove front seat assembly from body as previously described and place upside-down on a clean, protected surface. Remove affected adjuster assembly from seat as previously described.

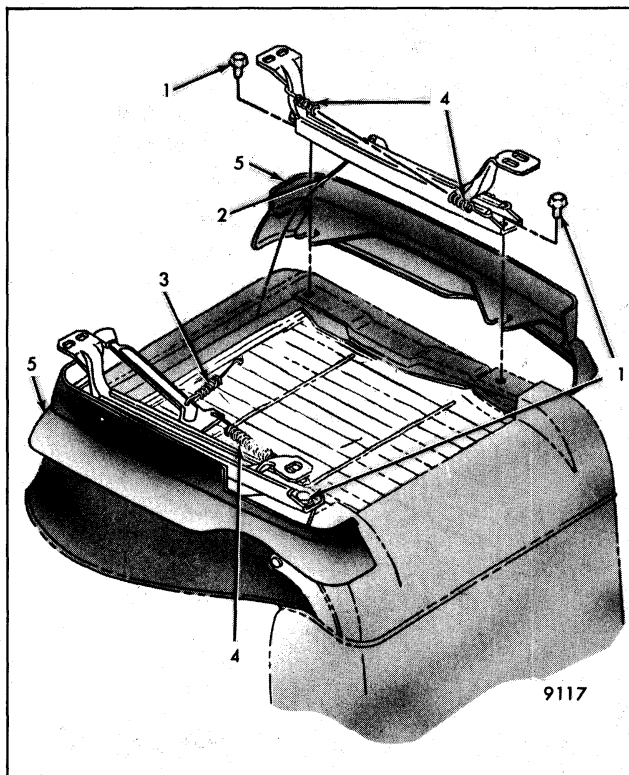


Fig. 9-22-"A" Body Bucket Seat Manually Operated Adjusters

- | | |
|---|--|
| 1. Adjuster-to-Seat Frame Attaching Bolts | 3. Locking Wire Retaining Spring at Lock Bar |
| 2. Adjuster Locking Wire | 4. Adjuster Assist Spring |
| | 5. Adjuster Track Cover |

3. At top of adjuster, remove vertical gearnut attaching nut and tension spring.
4. Lay adjuster on its side and remove vertical gearnut attaching screws; then remove gearnut from adjuster.

NOTE: If seat was not in forward position when removed from car, it may be necessary to manually operate the horizontal actuator to gain access to vertical gearnut attaching screws on bottom of lower channel.

5. If vertical gearnut is being replaced with a new part, transfer gearnut shoulder nut and tension spring to new gearnut assembly.
6. To install, reverse removal procedure. Be sure adjusters are "in phase" before installing seat assembly into body. See step 5 under "Front Seat Assembly - Removal and Installation".

LOWER OR UPPER CHANNEL AND PLASTIC SLIDES - Six-Way and Four-Way Seat Adjusters

Removal and Installation

Refer to Figures 9-27 and 9-28 for six-way adjusters or Figure 9-29 for four-way adjusters.

1. Remove seat assembly from body as previously described and place upside-down on a clean, protected surface. Remove affected adjuster assembly from seat as previously described.
2. At top of adjuster, remove vertical gearnut attaching nuts and tension springs. Lift adjuster upper channel upward; then remove horizontal actuator attaching screws and remove horizontal actuator from adjuster.
3. Slide lower channel until it is completely disengaged from upper channel. Plastic slides may be removed from lower channel.
4. To install upper and lower channel, reverse removal procedure.
 - a. If replacing lower channel, transfer plastic shoes to new lower channel.
 - b. If replacing upper channel, transfer vertical gearnuts to new upper channel.

NOTE: Make sure horizontal rack gear of lower channel and sliding surface of upper channel are properly lubricated with "Lubriplate" (630AAW) or equivalent.

5. To install, reverse removal procedure. When installing horizontal actuator, be sure actuator drive gear is fully engaged with teeth on lower channel. With actuator attaching screws tight, there should be no free motion between upper and lower adjusting channels. Adjust actuator "as required" until all free motion between channels has been removed (see "Power Six-Way Seat Adjuster Horizontal Actuator Adjustment" under Front Seat Adjustments). Be sure seat adjusters are "in phase" before installing seat assembly into body. See step 5 under "Front Seat Adjuster Assembly - Removal and Installation".

Check operation of seat to limits of both horizontal and vertical travel.

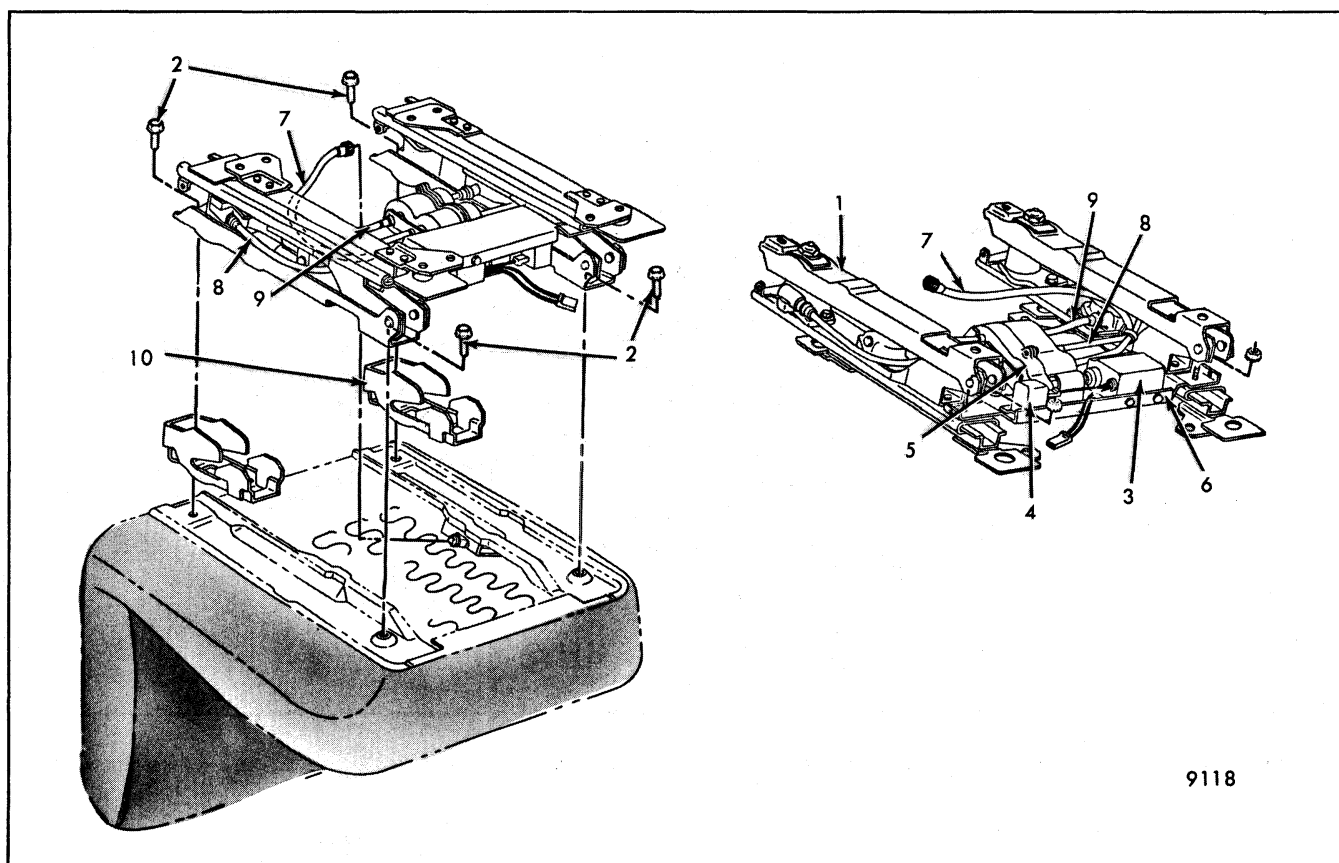


Fig. 9-23-Power Operated Four-Way Seat Adjusters - Used Only on 50-50 Passenger Seat Equipped with Power Reclining Seat Back

- | | | |
|---------------------------------|--|--|
| 1. Adjuster Assembly | 5. Transmission Assembly | 8. Rear Vertical Gear Nut and Drive Cable - Yellow |
| 2. Adjuster-to-Seat Frame Bolts | 6. Motor and Transmission Support | 9. Horizontal Actuator and Drive Cable - Black |
| 3. Motor Assembly | 7. Seat Back Reclining Gear Nut Drive Cable - Blue | 10. Rear Upper Track Covers |
| 4. Motor Relay and Connector | | |

HORIZONTAL AND VERTICAL DRIVE CABLES - Six-Way Seats

Removal and Installation

- On 60-40, 50-50, 40-40 and bucket seats, remove front seat assembly from body with attached adjusters, motor and transmission and place up-side-down on a clean, protected surface.
- If removing the short front vertical or horizontal cables on the right side of 60-40, 50-50, 40-40 or bucket seats, remove right seat adjuster. Detach cables from seat adjuster by squeezing oblong plastic connector and pulling cable off adjuster.
- Remove screws securing horizontal and vertical cable end plate on side of transmission from which cables are being removed and remove cables from seat assembly; then disengage cables from end plate.
- To install horizontal and vertical cables, reverse removal procedure. Install color coded drive cables as shown in Figure 9-14 for full width seats, Figure 9-13 for 60-40, 50-50, 40-40 and Figure 9-17 for bucket seats. Make sure cables are properly engaged with transmission prior to installing transmission end plate. Check operation of seat adjusters to limits of horizontal and vertical travel.

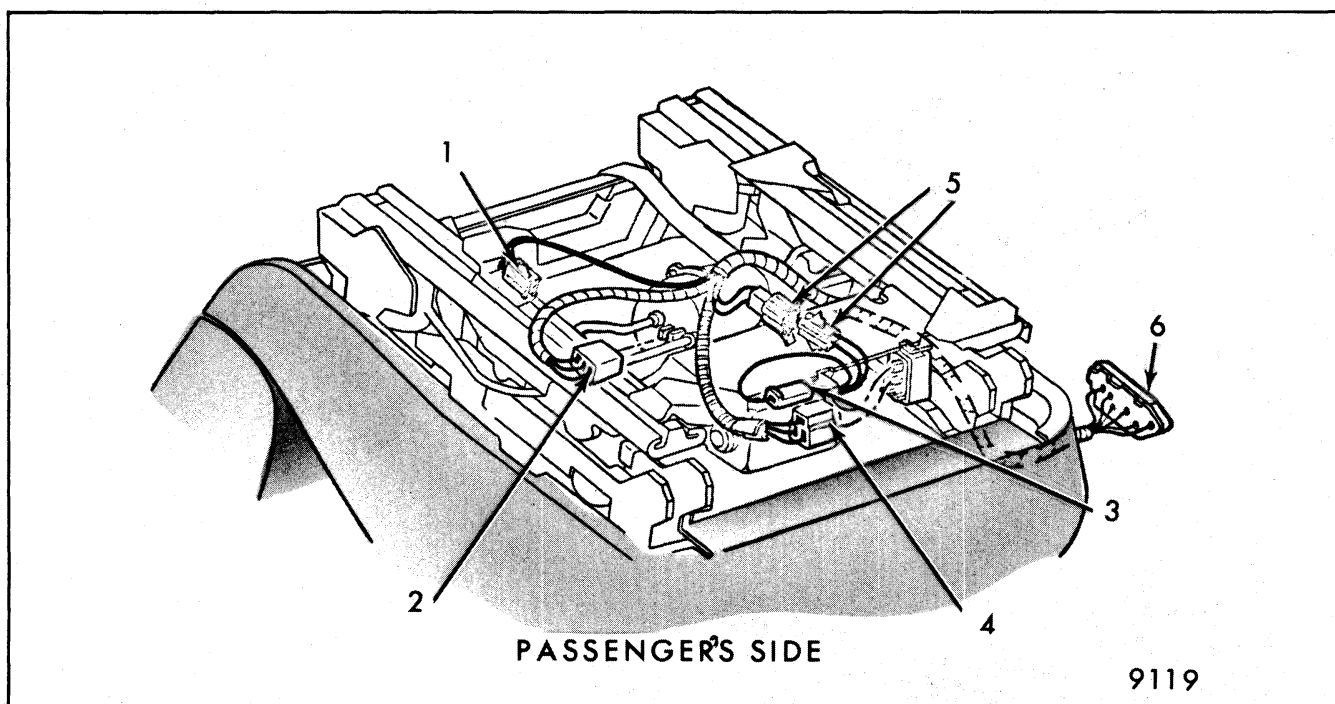


Fig. 9-24-Wire Harness Routing and Connectors for Power Operated Four-Way 50-50 Passenger Seat with Power Operated Reclining Seat Back

- | | | |
|---|--|---|
| 1. Harness-to-Feed Wire Connector | 3. Harness Motor-to-Relay Connector | 5. Harness Switch-to-Motor Fuel Connector |
| 2. Harness to transmission Solenoid Connector | 4. Harness Solenoid-to-Relay Connector | 6. Harness Switch Terminal Connector |

TRANSMISSION - Six-Way and Four-Way Seats

Removal and Installation

1. Remove front seat assembly with attached adjusters, motor and transmission as previously described and place upside-down on a clean, protected surface.
2. On 60-40, 50-50, 40-40 and bucket seats, remove right seat adjuster (see "Seat Adjuster - Removal and Installation").

NOTE: Using long nose pliers, disengage locking tab on harness portion of wire harness connector at transmission; then disengage connector from transmission.

3. Remove transmission to support attaching screws and screws securing cable end plate on both sides of transmission; then disengage transmission from motor drive coupling and cables and remove transmission from seat assembly (Figs. 9-14 and 9-13).

4. To install, reverse removal procedure. Install colored coded drive cables as shown in Figure 9-14 for full width seats and Figure 9-13 for 60-40, 50-50, 40-40 and Figure 9-17 for bucket seats. Make sure cables are properly engaged with transmission prior to installing transmission end plates. Check operation of transmission and seat adjusters to limits of horizontal and vertical travel.

DISASSEMBLY AND ASSEMBLY OF TRANSMISSION

1. Remove front seat adjuster transmission from seat assembly.
2. Remove screws securing rear gear housing to the solenoid housing; then carefully separate housings and remove component parts of transmission assembly (Fig. 9-30 or 9-31).
3. To assemble transmission, reverse removal procedure.

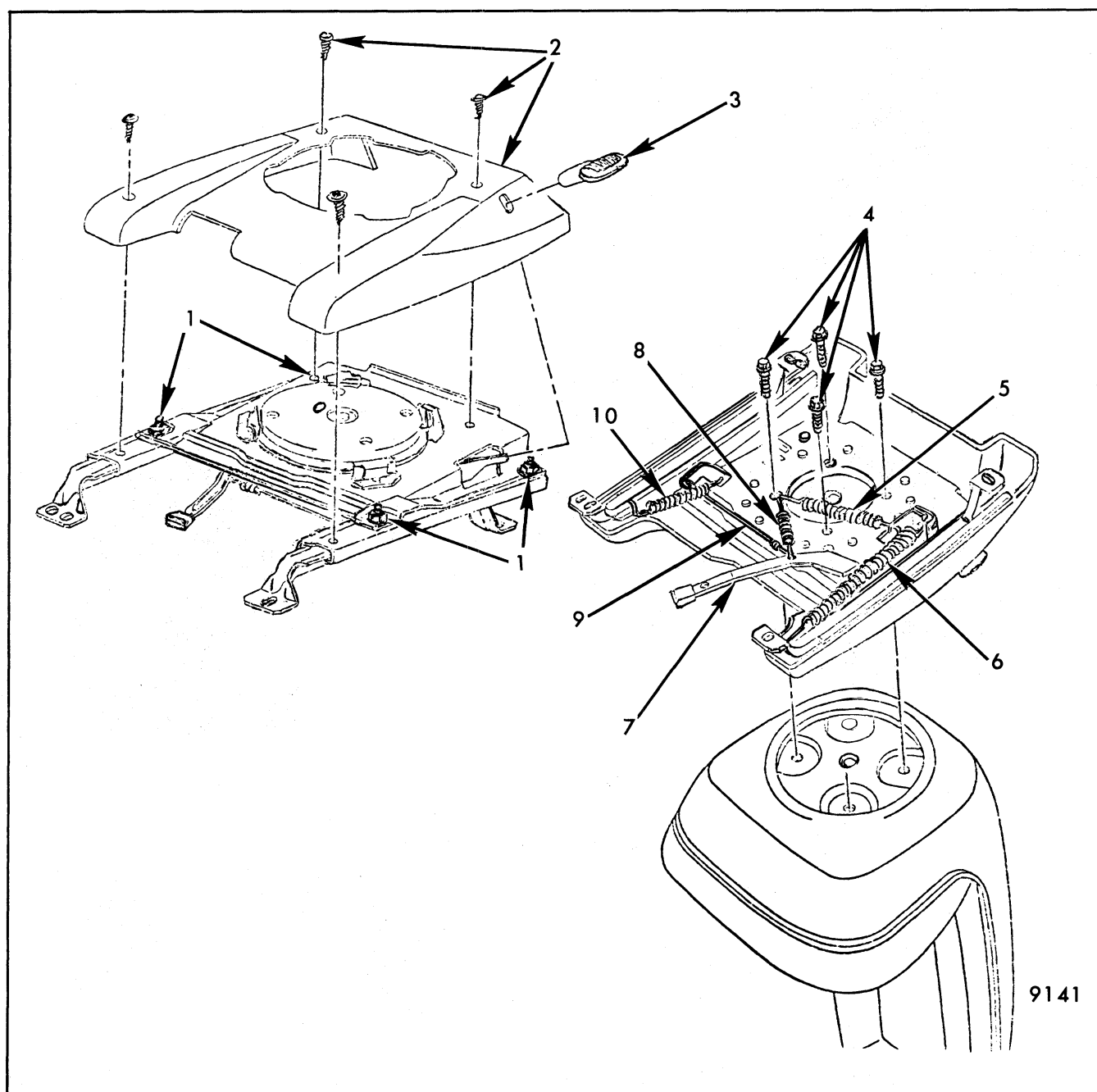


Fig. 9-25-Swivel Shell Bucket Seat, Swivel and Adjuster Cover, Swivel Assembly and Adjuster Assembly

- | | | | |
|--|--|--|-------------------------------------|
| 1. Swivel
Assembly-to-Adjuster
Attaching Bolts | 3. Swivel Control Knob | 5. Outer Adjuster Assist
Spring | 9. Adjuster Lock Control
Wire |
| 2. Swivel Cover and
Cover Attaching
Screws | 4. Shell
Bucket-to-Swivel
Attaching Screws | 6. Adjuster Lock Control
Lever | 10. Inner Adjuster Assist
Spring |
| | 5. Swivel Control Lock
Lever Spring | 7. Adjuster Lock Control
Lever Spring | |

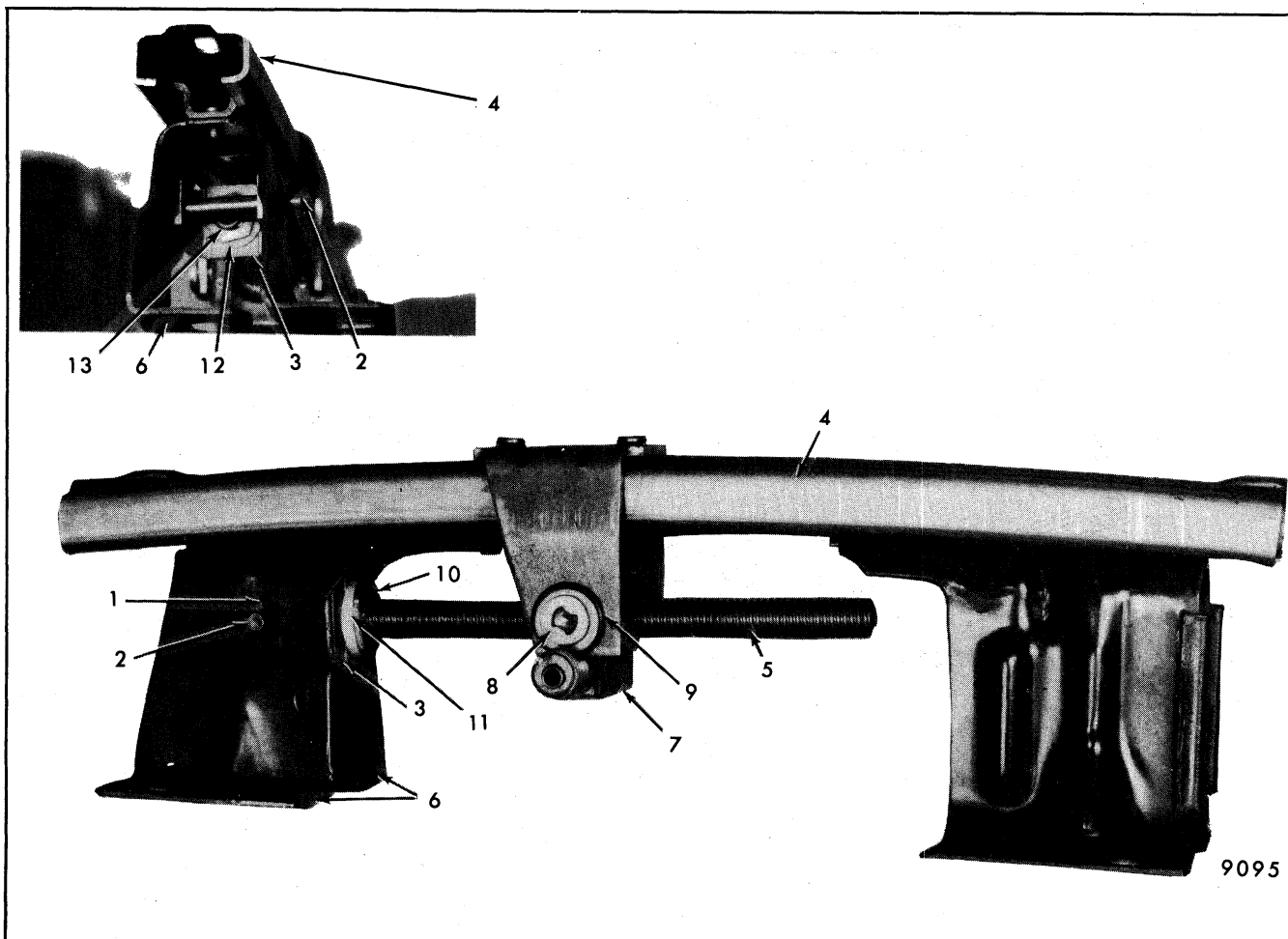


Fig. 9-26-Power Operated Horizontal (Two-Way) Seat Adjuster Components

- | | | | |
|---|---|---|---------------------------------------|
| 1. Jackscrew Front Support Cross Pin Retainer | 4. Adjuster Upper Channel | 7. Horizontal Gearnut Assembly | 10. Jackscrew Front Washer at Support |
| 2. Jackscrew Front Support Cross Pin | 5. Adjuster Jackscrew | 8. Gearnut Attaching Shoulder Screw (Clutch Type) | 11. Jackscrew Spacer at Support |
| 3. Jackscrew Front Support | 6. Adjuster Lower Channel Front Pedestals | 9. Gearnut Rubber Mounting Washer | 12. Jackscrew Grommet |
| | | | 13. Jackscrew Nut |

NOTE: Prior to or during installation, lubricate frictional surfaces of driving gear, idler gear, large gears, dog washers, gear shafts and solenoid plungers with "Lubriplate" (630AAW) or equivalent.

FRONT SEAT BACK ASSEMBLY - Four-Door Styles with Full Width Seat

Removal and Installation

1. Remove front seat assembly from body and place upside-down on a clean, protected surface. Remove seat side panels where present. On seats

where seat back panel covers seat back frame attaching bolts, detach or remove seat back panel.

2. Remove hog rings securing lower edge of seat back trim facing to seat cushion springs (see Fig. 9-32).
3. Raise lower edge of seat back trim, detach fiber-board breakover foundation and bend out tabs on seat back frame securing seat cushion springs. Disengage springs from tabs (Fig. 9-32).
4. At each side of seat, remove hog rings securing lower edge of seat back trim to seat bottom

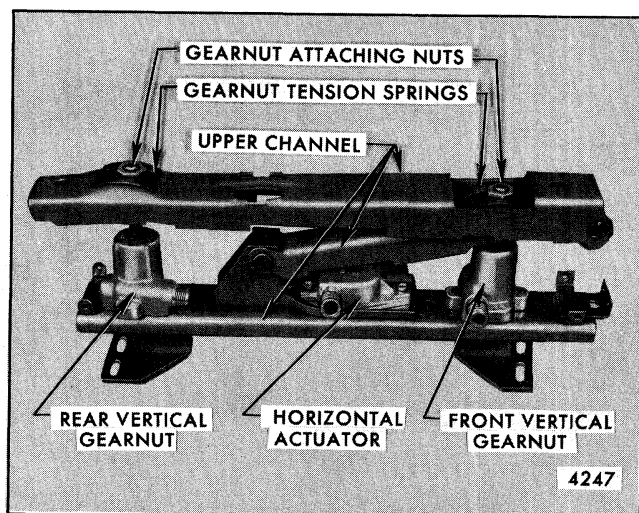


Fig. 9-27-Six-Way Seat Adjuster - "B, C and E" Styles

frame. Raise or turn back seat back trim to expose bolts securing seat back frame to seat cushion frame (Fig. 9-32). Where seat back lighter or courtesy light is present, disconnect wire from seat cushion frame.

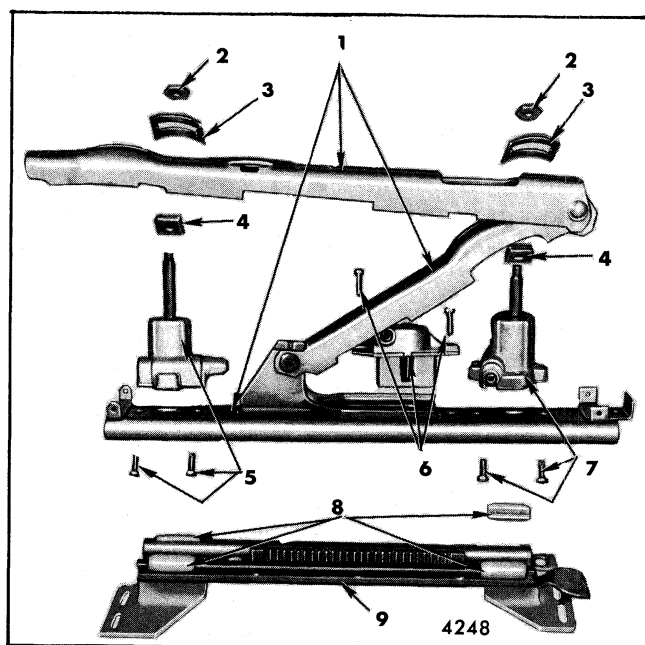


Fig. 9-28-Six-Way Seat Adjuster Components

- | | |
|--|--|
| 1. Upper Channel Assembly | 5. Rear Vertical Gearnut and Attaching Screws |
| 2. Upper Channel to Gearnut Attaching Nuts | 6. Horizontal Actuator and Attaching Screws |
| 3. Gearnut Tension Springs | 7. Front Vertical Gearnut and Attaching Screws |
| 4. Gearnut Shoulder Nuts | 8. Plastic Shoes |
| | 9. Lower Channel |

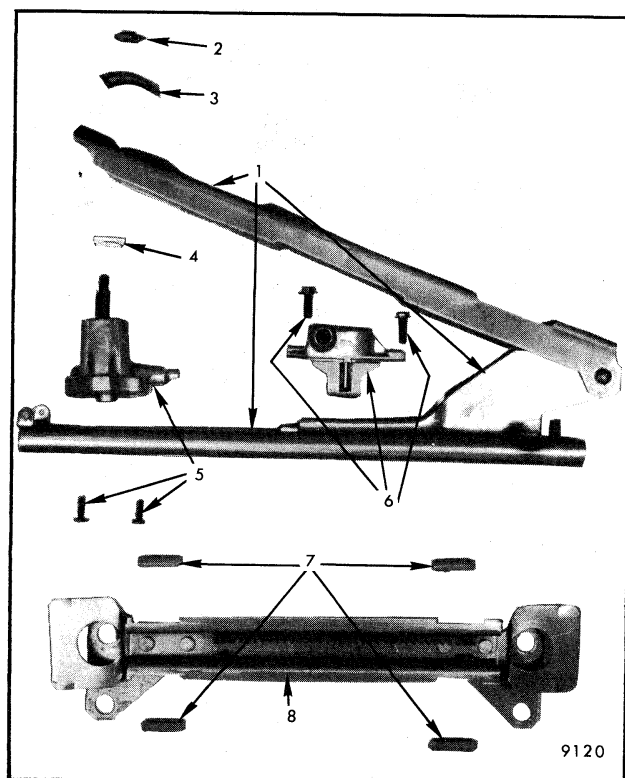


Fig. 9-29-Four-Way Seat Adjuster Components

- | | |
|---|--|
| 1. Upper Channel Assembly | 5. Rear Vertical Gearnut Assembly and Attaching Screws |
| 2. Upper Channel to Gearnut Attaching Nut | 6. Horizontal Actuator Assembly and Attaching Screws |
| 3. Gearnut Tension Spring | 7. Plastic Shoes |
| 4. Gearnut Shoulder Nut | 8. Lower Channel |

- Place seat assembly in upright position. Then with a helper holding seat back assembly, remove seat back attaching bolts on each side of seat and remove seat back assembly.
- To install seat back assembly, reverse removal procedure.

FRONT SEAT BACK PANEL COURTESY LAMPS AND/OR LAMP SWITCH - Oldsmobile Luxury Sedan

Removal and Installation

- Remove exposed screws securing courtesy lamp or lamp switch to panel; then disengage lamp or switch from panel.
- Disconnect lamp or switch wires (see Fig. 9-33) and remove lamp or switch.

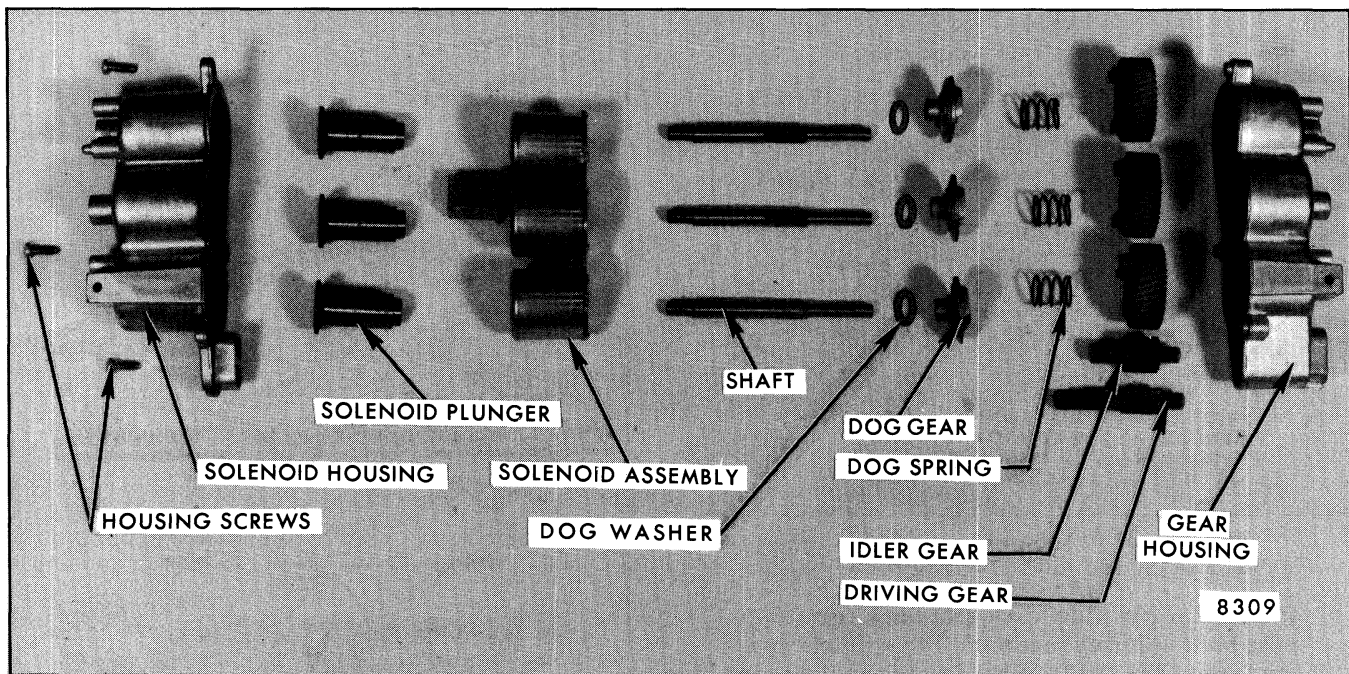


Fig. 9-30-Six-Way Seat Adjuster Transmission Component Parts for 60-40, 50-50, 40-40 and Bucket Seats

3. To install front seat back courtesy lamp and/or switch, reverse removal procedure.

FRONT SEAT BACK ASSIST STRAPS AND BACK PANEL ASSEMBLY - Oldsmobile Luxury Sedan

Removal and Installation

1. At the center and outer ends of the assist straps, carefully pry (snap) off assist strap escutcheons (Fig. 9-34, Views "A" and "B").
2. Remove assist strap and panel attaching screws (Fig. 9-34) and remove assist straps. Lift panel assembly upward to disengage from hanger supports at outer ends of panel (see Fig. 9-34, View "C"); then disconnect clock and courtesy lamp switch wire harness connector (see Fig. 9-33) and remove panel assembly from seat back.
3. To install assembly or assist straps, reverse removal procedure.

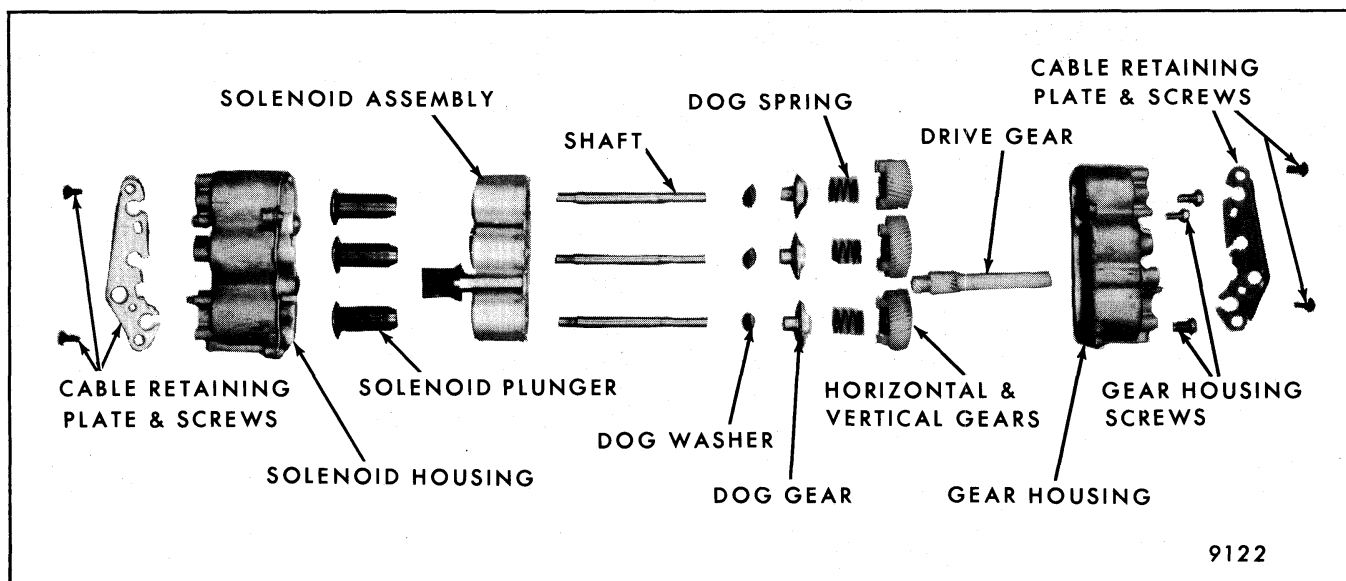


Fig. 9-31-Six-Way Seat Adjuster Transmission Component Parts - Full Width Bench Seat

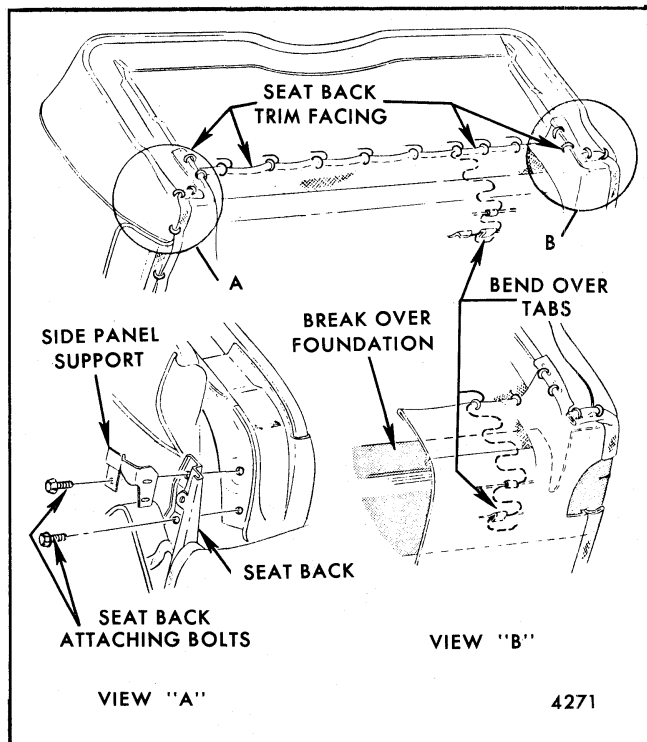


Fig. 9-32-Front Seat Back Attachment - Typical Four Door Attachment - Styles with Full Width Conventional Seat

FRONT SEAT BACK ASSIST STRAP AND PANEL ASSEMBLY - Cadillac

Removal and Installation

Refer to Figure 9-36 for four-door styles, Figure 9-35 for two-door styles and Figure 9-37 for 6CB69 style.

To remove and install the front seat back assist strap, front seat back panel or related components, remove components in numerical sequence as shown in Figure 9-35 for two-door styles, or Figure 9-36 for four-door styles.

NOTE: To remove assist strap side escutcheons carefully pry escutcheon off retainer with a flat-bladed tool. Apply tape over end of tool to prevent damaging escutcheon finish.

FRONT SEAT BACK ASSEMBLY (Right or Left) - Four-Door Style Full Width Seat with Notch Down Center Armrest or 60-40 Seats

Removal and Installation - Refer to Figure 9-38

1. Remove front seat assembly from body and place upside-down on a clean, protected surface.

Remove seat cushion side panels. On 60-40 seats remove seat cushion and seat back side panels.

2. Remove hog rings securing lower edge of seat cushion trim bottom facing to seat cushion springs and frame.
3. Remove seat side panel where present or outer hinge arm cover; then remove retainer securing seat back outer arm to hinge pin.
4. Detach trim at outer hinge arm sufficiently to remove outer hinge arm lock-up screw.
5. Turn seat assembly right side up. Carefully disengage seat back outer arm from hinge pin; then tilt seat back forward and upward to disengage seat back inner arm from hinge pin and remove seat back from body.
6. To install seat back assembly, reverse removal procedure. If seat back outer arm retainer is damaged, install new retainer.

FRONT SEAT BACK ASSEMBLY (Right or Left) - Two-Door Style Conventional Full Width Seat, Seat with Notch Down Center Armrest, 40-40 and 60-40 Seat

Removal and Installation

1. On seat with seat cushion side panel, remove side panel and detach seat cushion trim sufficiently to expose outer hinge pin and retainer (Fig. 9-39 or 9-40).

On seats where seat back side panel covers outer hinge pin and retainer, remove seat back side panel.

On seats with outer hinge arm cover or inner hinge pin cover, remove screw or detach fastener securing cover and remove cover (Fig. 9-39 or 9-40).

2. Using a flat-bladed tool carefully remove retainer, securing seat back outer arm to hinge pin (Fig. 9-39 or 9-40).
3. Carefully disengage seat back outer arm from hinge pin; then tilt seat back forward and upward to disengage seat back inner arm from hinge pin and detach seat back from seat cushion. On seats with manually operated seat back locks the seat back can be removed from the body.

NOTE: On seats equipped with electric seat back

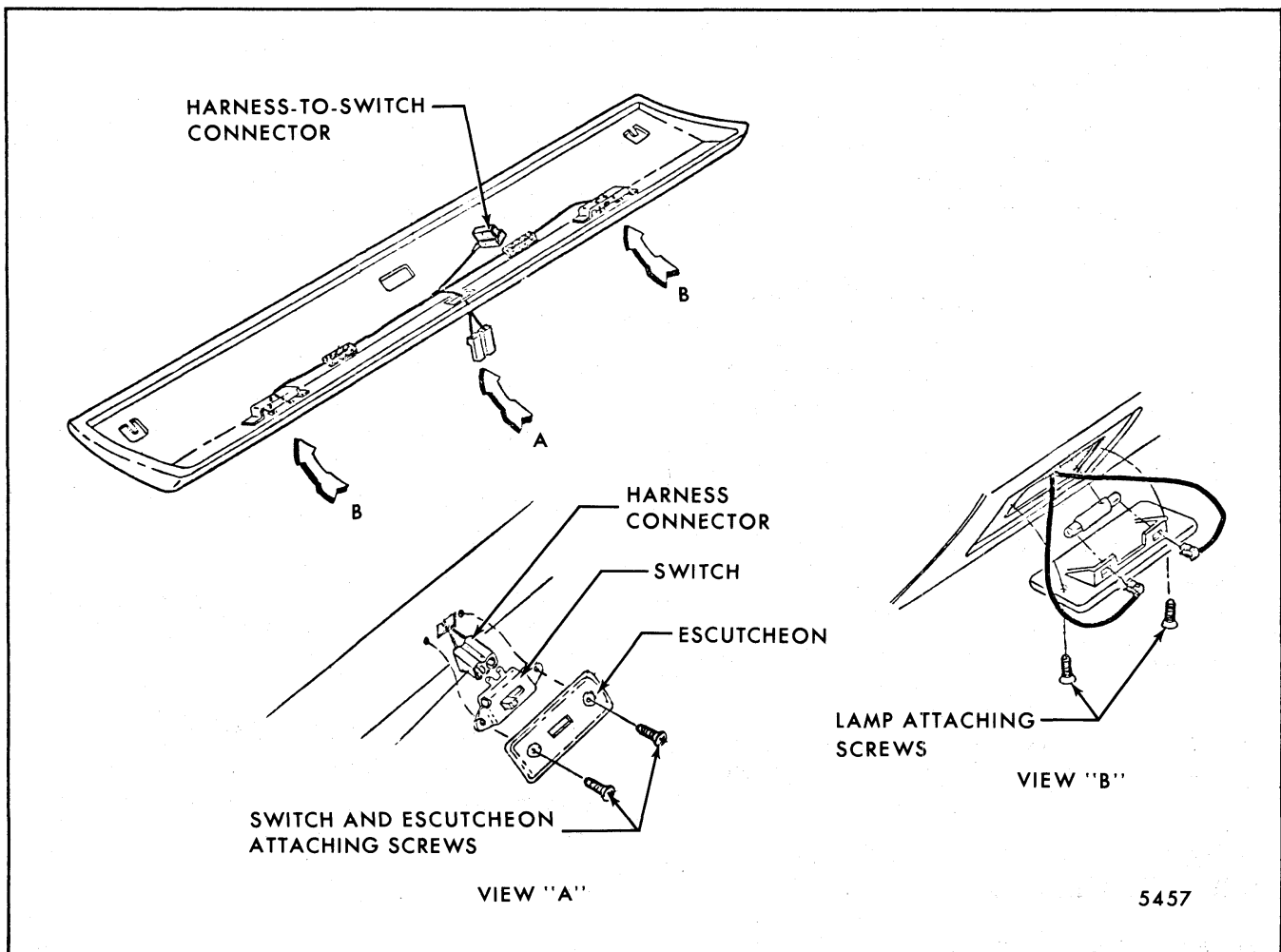


Fig. 9-33-Front Seat Back Courtesy Lamps and Lamp Switch - Oldsmobile Luxury Sedan

locks, lay seat back on seat cushion. From under front of seat, disconnect lock actuator feed wire from relay jumper wire and detach feed wire clip from strap securing wire to seat spring; then carefully pull feed wire up through seat cushion and remove seat back from body.

4. To install seat back assembly, reverse removal procedure making sure washers are installed over hinge pins prior to installing seat back. Install hinge arm retainer on hinge pin using 5/8" socket. If outer retainer is damaged, install new retainer.

CAUTION: Check operation of seat back locks. On seats equipped with manually operated locks the seat back should lock with no more than 10 pounds rearward effort applied at the top outboard corner of the seat back. On seats equipped with electric seat back locks both seat back locks should lock in the upright position when the doors are closed. If either seat back does not

lock refer to "Electric Seat Back Lock Diagnosis Chart".

FRONT SEAT BACK ASSEMBLY (Right or Left) - Chevrolet and Cadillac, 50-50 Seat with Reclining Seat Back

The Chevrolet and Cadillac 50-50 passenger reclining seat back can be adjusted approximately 20 degrees rearward of normal position.

The passenger reclining unit consists of a spring-loaded friction type cylinder and plunger located in right side of the passenger seat frame. The reclining unit is controlled by a lever type handle at the right side of the seat cushion. When the control handle is raised the unit is unlocked and with no pressure on the seat back the spring loaded unit will move the seat back forward or the seat back can be tilted rearward by applying rearward pressure on the back. When the control handle is released the reclining unit maintains the seat back in position; however, the

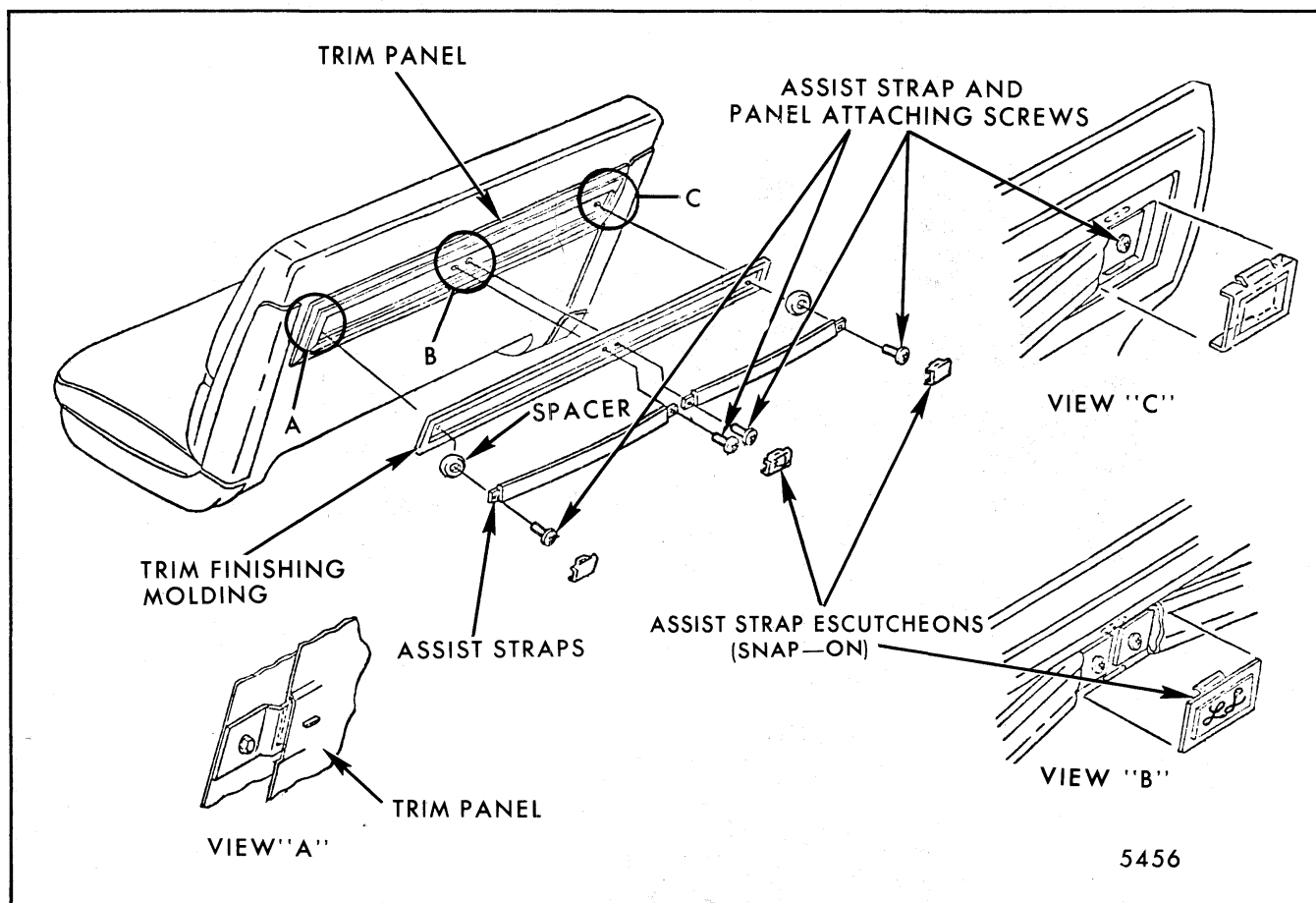


Fig. 9-34-Front Seat Back Assist Straps and Panel Assembly - Oldsmobile Luxury Sedan

seat back can be pushed forward to normal position without actuating the control handle.

Back Assembly - Removal and Installation - Refer to Figure 9-41

1. On Chevrolet two-door styles remove seat back lock control handle. On two or four-door styles remove seat back side outer cover panel secured by four screws.
2. Detach seat back trim at outer side facing sufficiently to remove seat back attaching bolt and on four-door styles seat back lock-out bolt.
3. Move seat back outward sufficiently to disengage inner pin from cushion frame support; then remove seat back from seat cushion.
4. To install seat back assembly, reverse removal procedure.

FRONT SEAT RECLINING BACK ASSEMBLY - CADILLAC ELDORADO 50-50 SEAT

Removal and Installation - Refer to Figure 9-42

1. Remove passenger seat assembly, and place on a clean protected surface.
2. Detach seat back outer trim sufficiently to gain access to seat back hinge attaching bolt.
3. Remove seat back hinge attaching bolt. Lift lock bolt hook to disengage from striker pin; then raise outboard side of seat back sufficiently to disengage hinge attaching pin on inboard side of seat back from hole in seat back support and remove seat back assembly.
4. To install seat back assembly, reverse removal procedure.

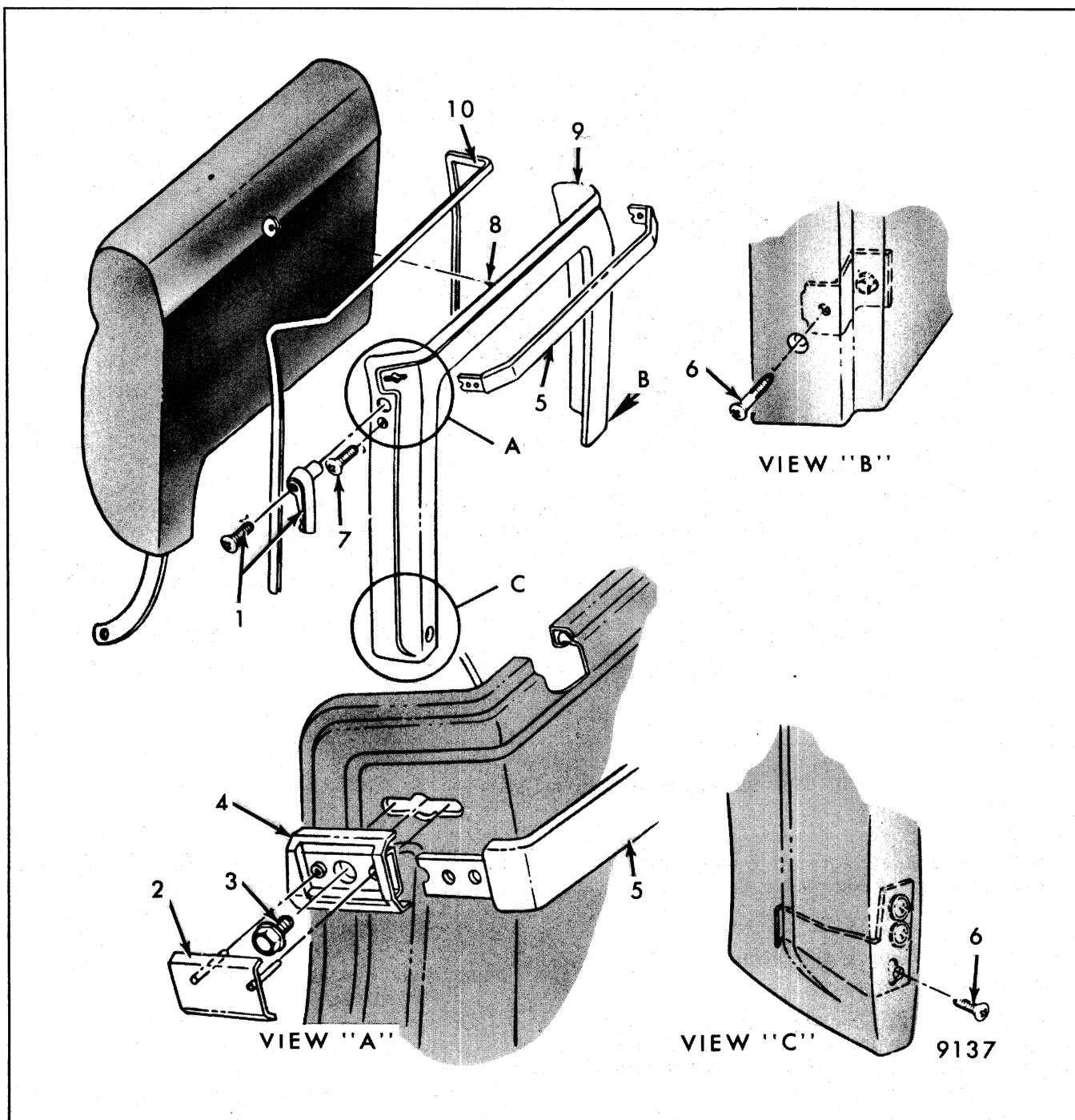


Fig. 9-35-Front Seat Back Assist Strap and Panel Assembly - Cadillac Two-Door Styles

- | | | | |
|--|--|---------------------------------|--|
| 1. Seat Back Lock Handle and Attaching Screw | 3. Escutcheon and Strap Retainer Attaching Screw | 5. Assist Strap | 8. Panel Attaching Fastener (Snap-On Type) |
| 2. Assist Strap Escutcheon | 4. Escutcheon and Strap Retainer | 6. Panel Lower Attaching Screws | 9. Seat Back Panel |
| | | 7. Panel Upper Attaching Screws | 10. Panel Finishing Molding - Right and Left |

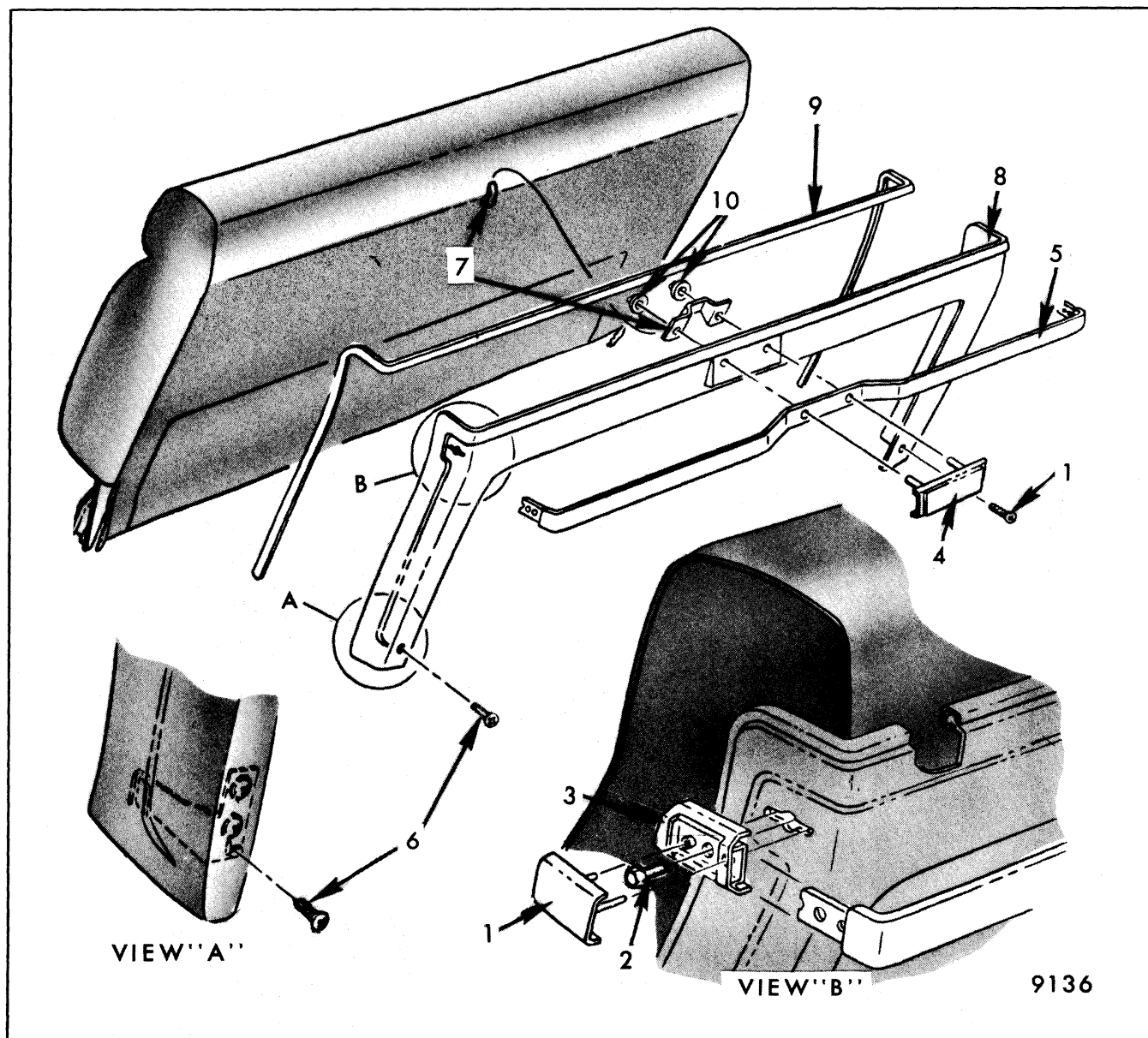


Fig. 9-36-Front Seat Back Assist Strap and Panel Assembly - Cadillac Four-Door Styles

- | | | | |
|---|---|---|---|
| 1. Assist Strap Side Escutcheon (Snap-On) | 4. Assist Strap Center Escutcheon (Snap-On) | 7. Panel Center Hanger Bracket (on Panel) and Bracket Hook (on Seat Back) | 9. Panel Finishing Molding |
| 2. Assist Strap Side Retainer Screw | 5. Assist Strap | 8. Panel Assembly | 10. Panel Center Hang-On Bracket Push-On Nuts |
| 3. Assist Strap Side Retainer | 6. Panel Lower Attaching Screws | | |

FRONT SEAT BACK RECLINING UNIT Chevrolet and Cadillac Styles with Manually Operated Reclining Seat Back

Removal and Installation - Refer to Figures 9-41
and 9-42

1. Remove passenger front seat assembly as de-

scribed under "Front Seat Assembly - Removal and Installation" and place on clean protected surface.

2. Remove reclining control handle. Detach seat trim side facing from right of seat cushion frame and turn back trim sufficiently to gain access to reclining unit front and rear attaching pin retainers.

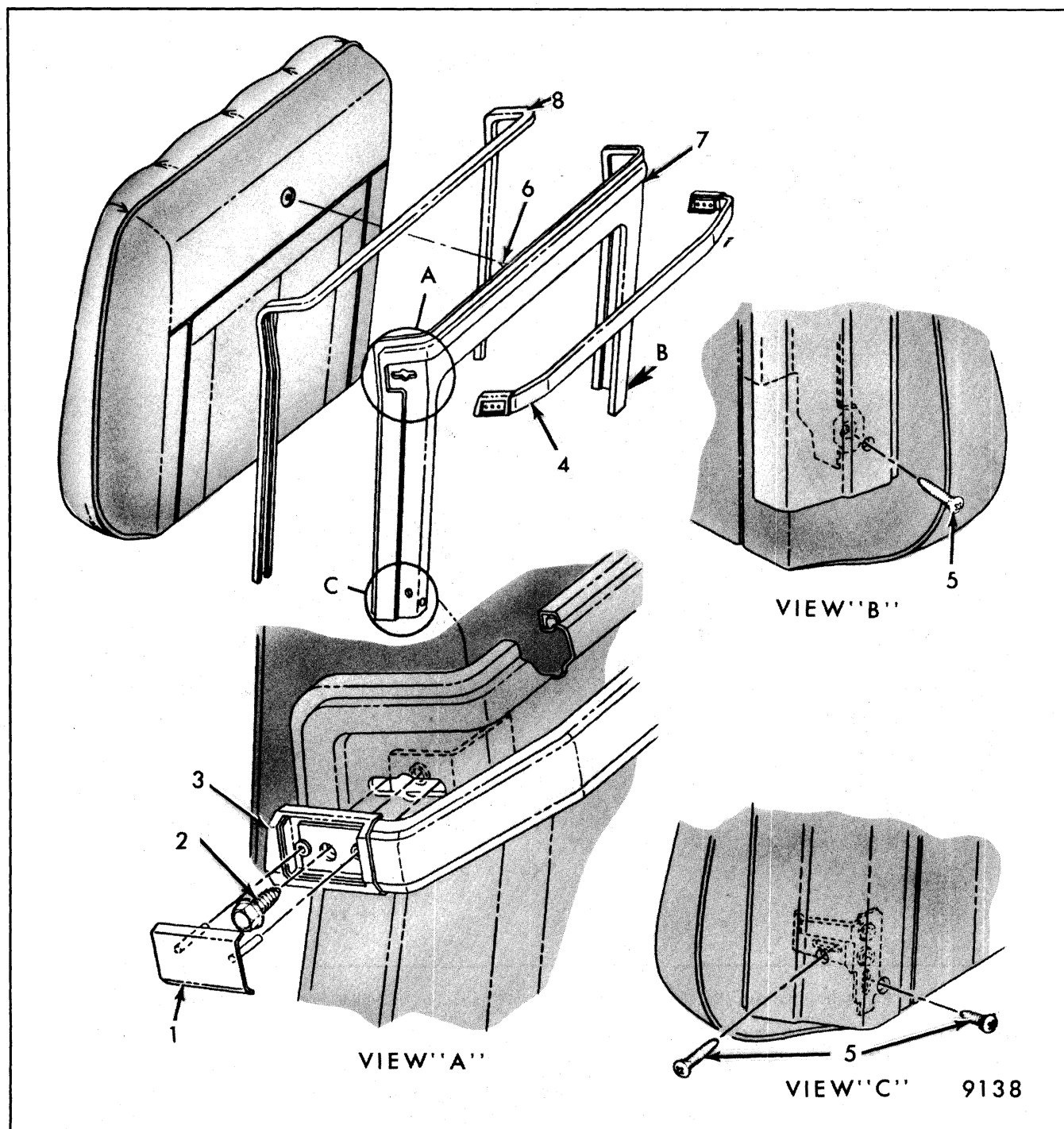


Fig. 9-37-Front Seat Back Assist Strap and Panel Assembly - Cadillac "6CB69" Style

- | | | |
|--|-------------------------------------|--|
| 1. Assist Strap
Escutcheon | 3. Escutcheon and Strap
Retainer | 6. Panel Attaching
Fastener (Snap-In
Type) |
| 2. Escutcheon and Strap
Retainer Attaching
Screw | 4. Assist Strap | 7. Panel Assembly |
| | 5. Panel Lower
Attaching Screws | 8. Panel Finishing
Molding |

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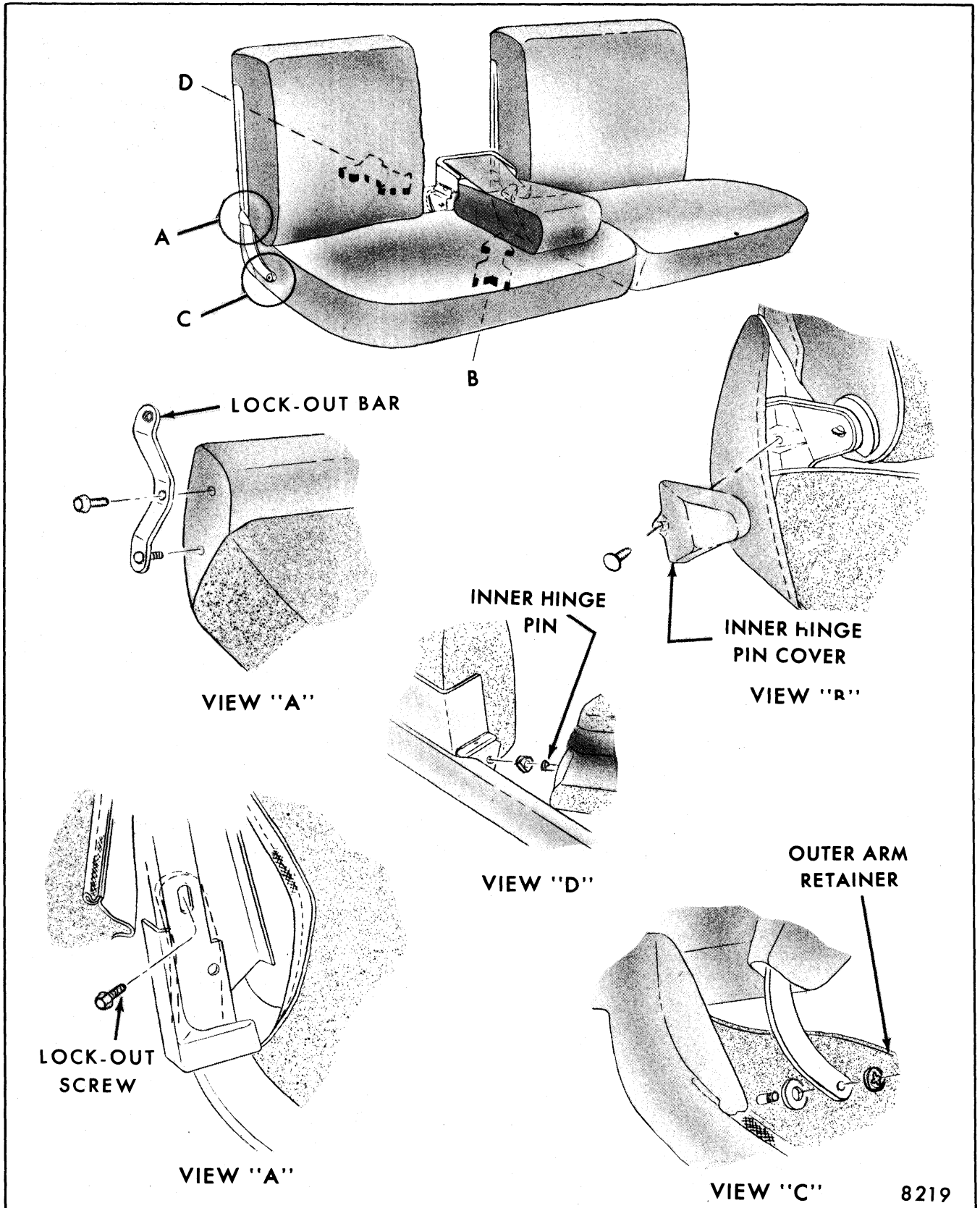


Fig. 9-38-Front Seat Back Attachment (Right or Left) - Four-Door Style 60-40 Seat Shown (Typical for Four-Door Full Width Notch Down Center Armrest Seat and Four-Door 40-40 Seat)

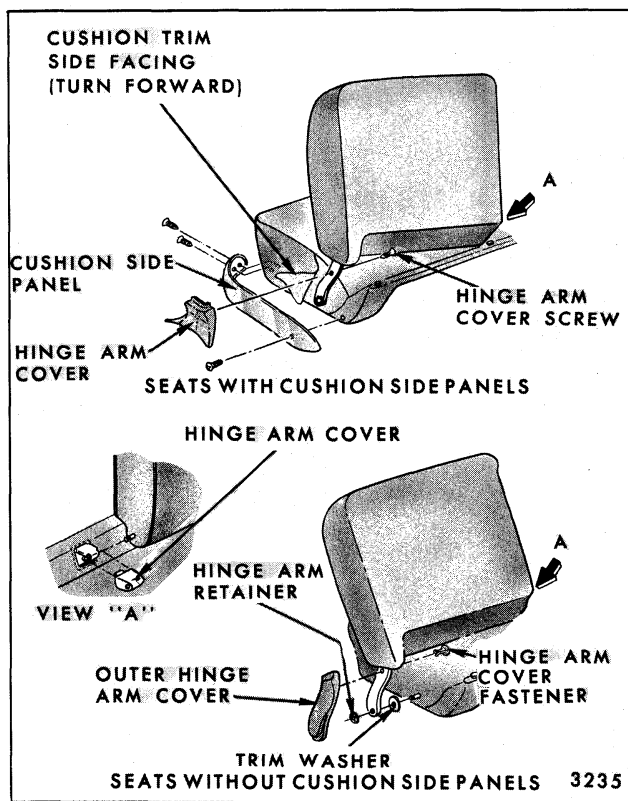


Fig. 9-39-Seat Back Attachment - Two-Door Style Full Width Seat

3. Position seat back in a full reclined position; then remove reclining unit front and rear attaching pin snap ring retainers using snap ring tool or a suitable hooked end tool. Remove attaching pins and reclining unit.
4. To install reclining unit, reverse removal procedure. To facilitate installation of reclining unit, push plunger into cylinder approximately 1/2 inch to shorten unit. This can be accomplished by placing plunger end of unit on floor and pushing down while actuating control lever; then when plunger has moved into cylinder approximately 1/2 inch, release control lever to lock plunger in position. Check operation of reclining unit to full limits of travel.

FRONT SEAT BACK POWER RECLINING ACTUATOR - Cadillac "C and E" Styles with Power Actuated Reclining Seat Back

A power operated reclining seat back with power operated four-way seat adjusters is available as an option on Cadillac "C and E" styles. The power operated reclining seat back is operated by an electric six-way seat motor and transmission on which the front vertical transmission solenoid and drive cable

operate the seat back reclining actuator. When the power seat adjuster front control switch, located on the seat cushion outboard side panel, is actuated upward the seat back reclines; when the control switch button is actuated downward, the seat back moves forward. The seat adjuster center control switch actuates the seat horizontally and the rear control switch actuates the rear of the seat up and down.

Removal and Installation - Refer to Figures 9-43 and 9-44

1. Remove front seat assembly as described under "FRONT SEAT ASSEMBLY - Removal and Installation", and place up-side down on a clean protected surface.
2. Detach outboard side of cushion trim sufficiently to gain access to reclining actuator attaching screws and actuator coupling (see Fig. 9-44).
3. Unscrew reclining back drive cable from reclining actuator and detach cable from actuator.
4. Remove retainer (tru-arc) from actuator pin and remove pin (see Fig. 9-44).
5. Remove actuator-to-seat cushion frame attaching bolts and remove actuator assembly from seat.
6. To install actuator assembly, reverse removal procedure. Check operation of power reclining seat back to full limits of travel.

ACTUATOR ASSEMBLY-Disassembly and Assembly - Refer to Figure 9-45

1. Remove actuator assembly from seat as previously described.
2. To remove jackscrew, spacer or coupling, remove jackscrew coupling stop nut; then unscrew jackscrew, spacer and coupling out of gearnut assembly. Loosen coupling jamb nut and remove coupling from jackscrew.
3. To remove gearnut assembly, remove jackscrew, spacer and coupling as described in step 1; then remove clutch head screws securing gearnut assembly to support and remove gearnut.
4. To assemble actuator assembly, reverse disassembly procedure.

NOTE: Prior to or during installation, lubricate jackscrew.

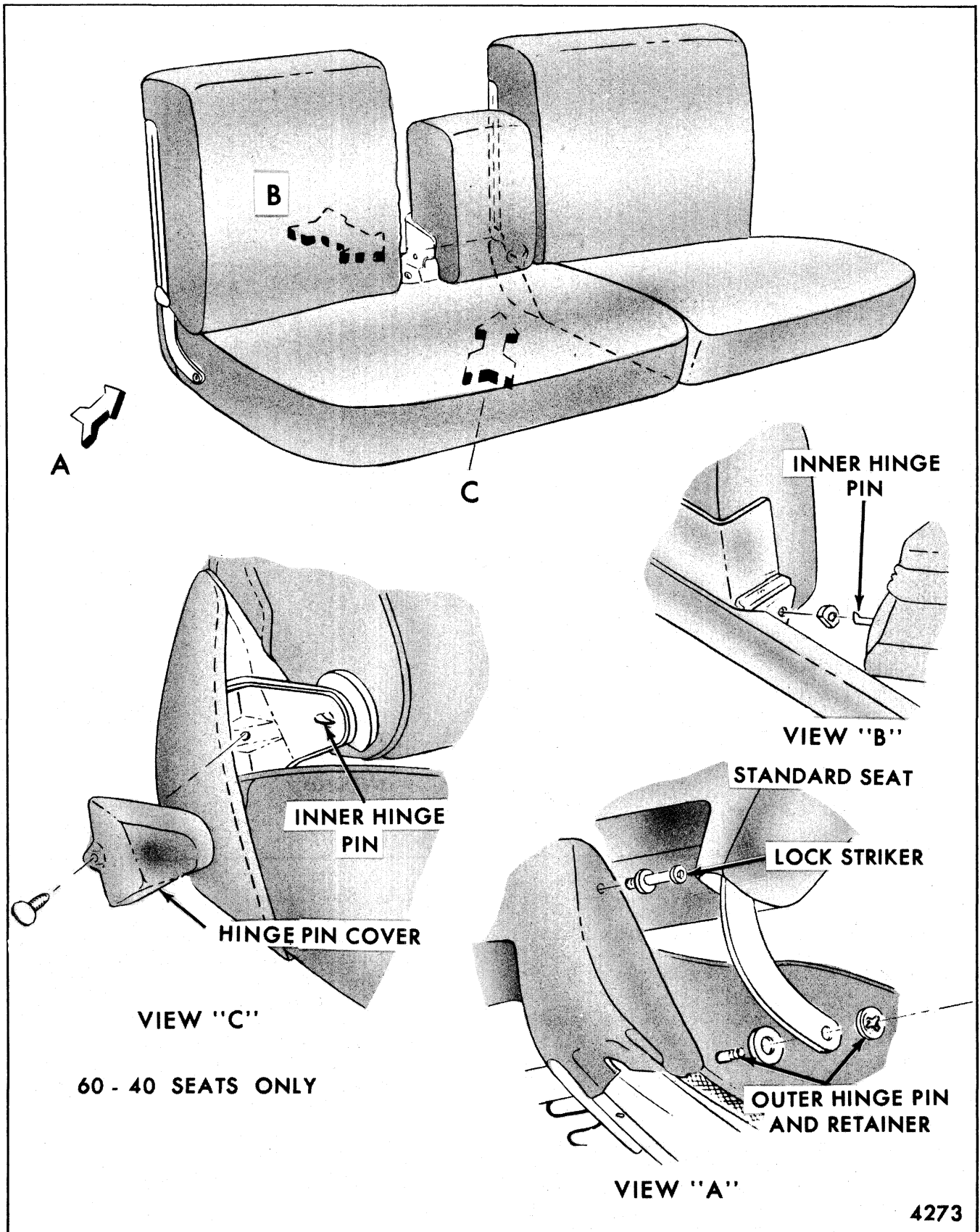


Fig. 9-40-Seat Back Attachment - Two-Door Style Notch Down Center Armrest Seat and 60-40 Seat

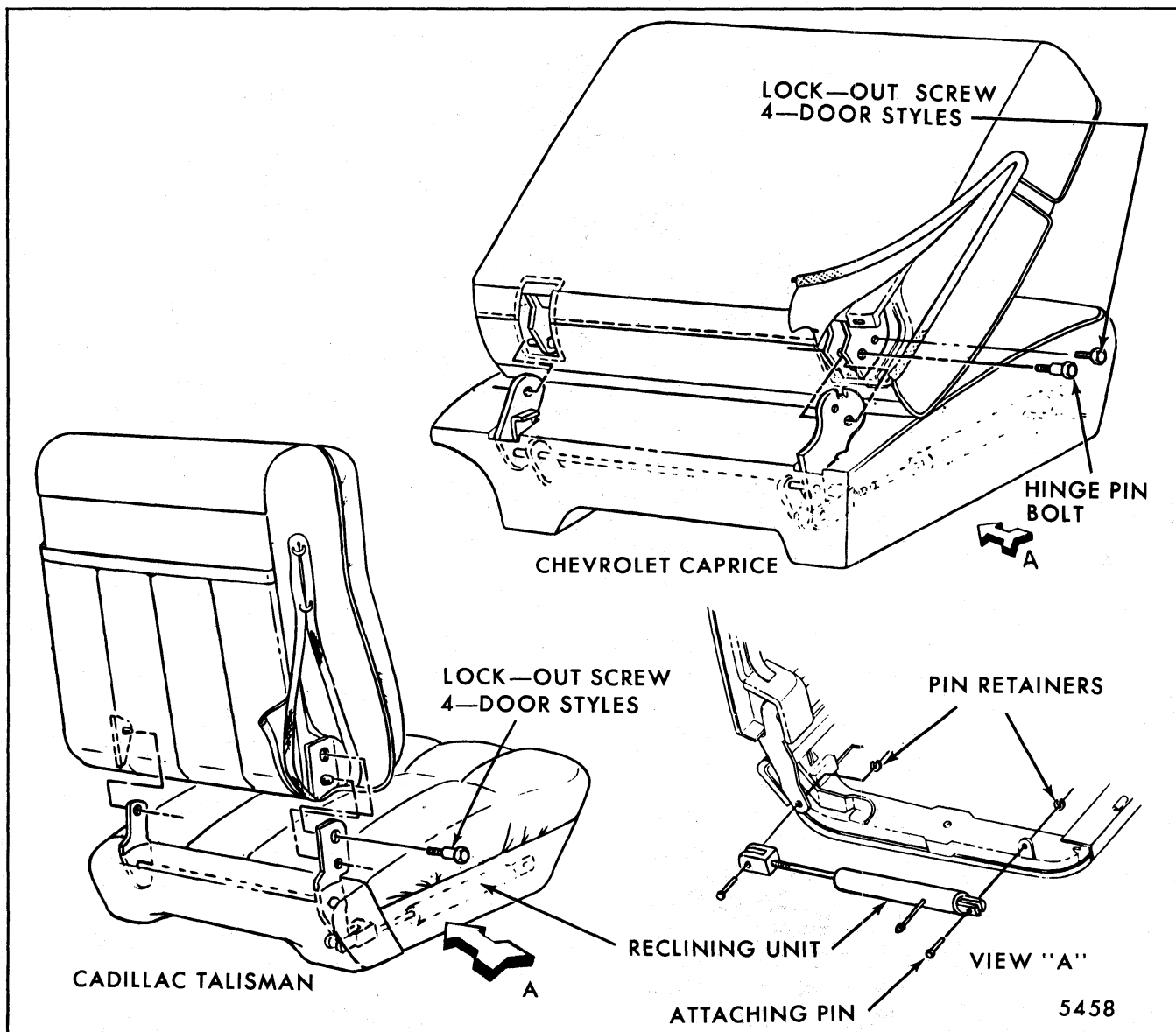


Fig. 9-41-Front Seat Reclining Back Assembly - Chevrolet 50-50 Seat, Cadillac Talisman 40-40 Seat

FRONT SEAT BACK - Standard Bucket Seats

Removal and Installation

1. On seats equipped with full seat back panels, remove seat back panel by removing lower attaching screws and lifting panel upward to disengage upper brackets from hangers on seat back frame.
2. On seats equipped with inner hinge arm link, remove link upper retainer (Fig. 9-46) and disengage link from hinge arm. On four-door style bucket seats, remove bolt securing seat back lock-up support to seat back frame hinge arm and disengage support from hinge arm (Fig. 9-46).
3. At both sides of seat back remove retainer securing hinge arm to hinge arm pin on seat cushion (Fig. 9-46); then disengage hinge arms from pins and remove seat back.
4. To install seat back assembly, reverse removal procedure. Where necessary, replace damaged retainers with new retainers. Install hinge arm pin retainer using a 5/8" socket.

SALON BUCKET SEAT - Oldsmobile "A" Styles

The salon bucket seat incorporates an adjustable reclining seat back and built in head restraint on both

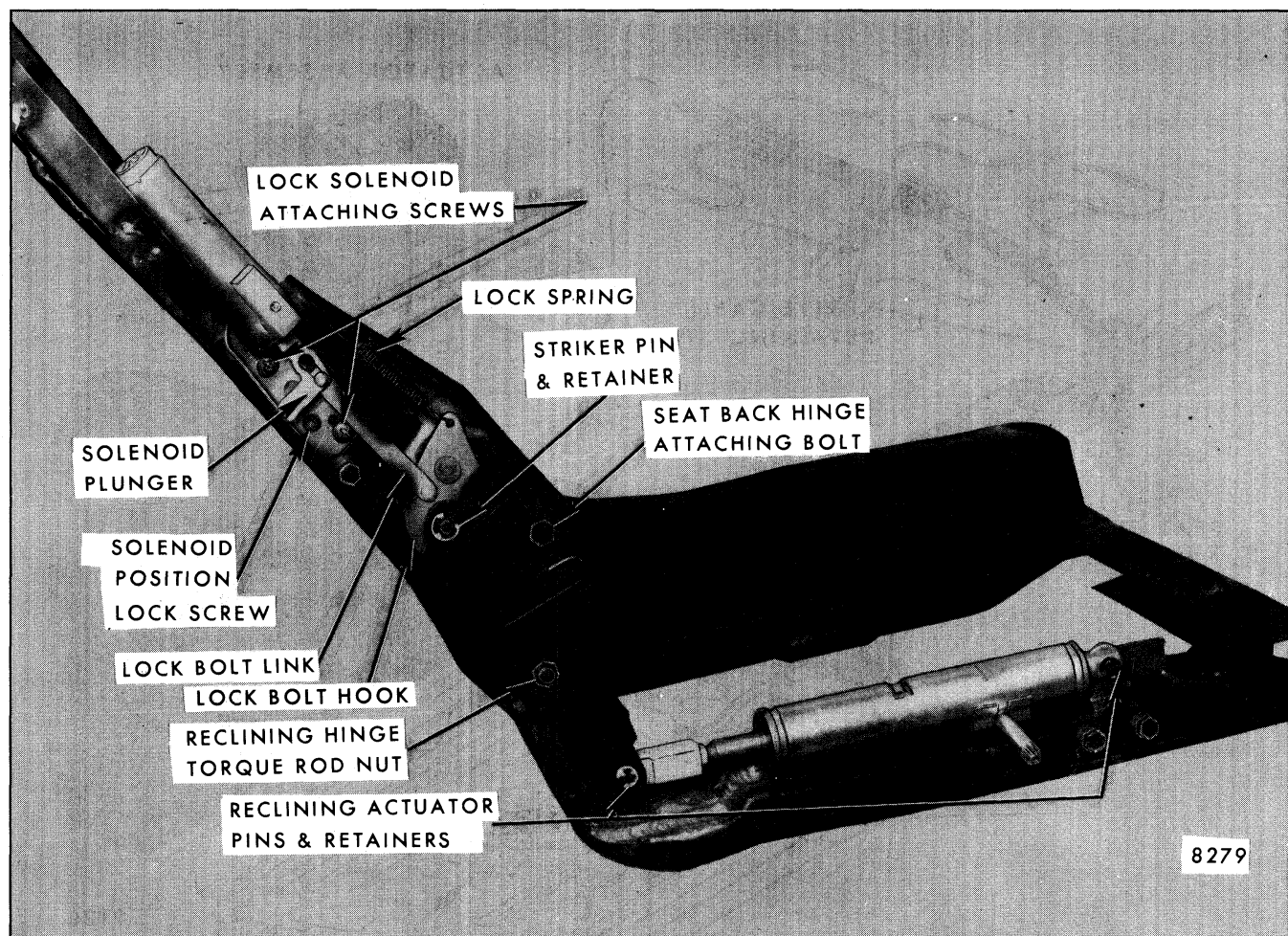


Fig. 9-42-Passenger 50-50 Front Seat Reclining Back, Seat Back Lock and Reclining Actuator - Cadillac Eldorado

the driver's and passenger's seat. The reclining unit, which consist of a spring loaded type cylinder and plunger, is located in the outboard side of the seat cushion frame. The reclining unit actuates the outboard reclining hinge which is connected to the inboard reclining hinge by a control rod, which maintains both hinges in the same position. When the reclining unit control lever located on the outboard side of the seat cushion is raised, the unit is unlocked and the seat back can be tilted rearward by applying rearward pressure on the seat back; or with no pressure on the seat back the spring loaded reclining unit will return the seat back forward to normal position. When the control lever is released, the reclining unit maintains the seat back in desired position; however, the seat back can be pushed forward to normal position without actuating the control lever.

Salon Bucket Seat Back Ash Tray and Finishing Panel - Removal and Installation - Refer to Figure 9-47

1. Remove ash tray from housing. Remove two screws securing ash tray housing to seat back frame and remove housing.
2. From under rear of seat detach seat back finishing panel elastic straps.
3. Lift up lower flap of finishing panel and remove two screws securing panel to lower retainers.
4. Lift finishing panel upward to disengage panel from upper retainers and remove panel from seat back.

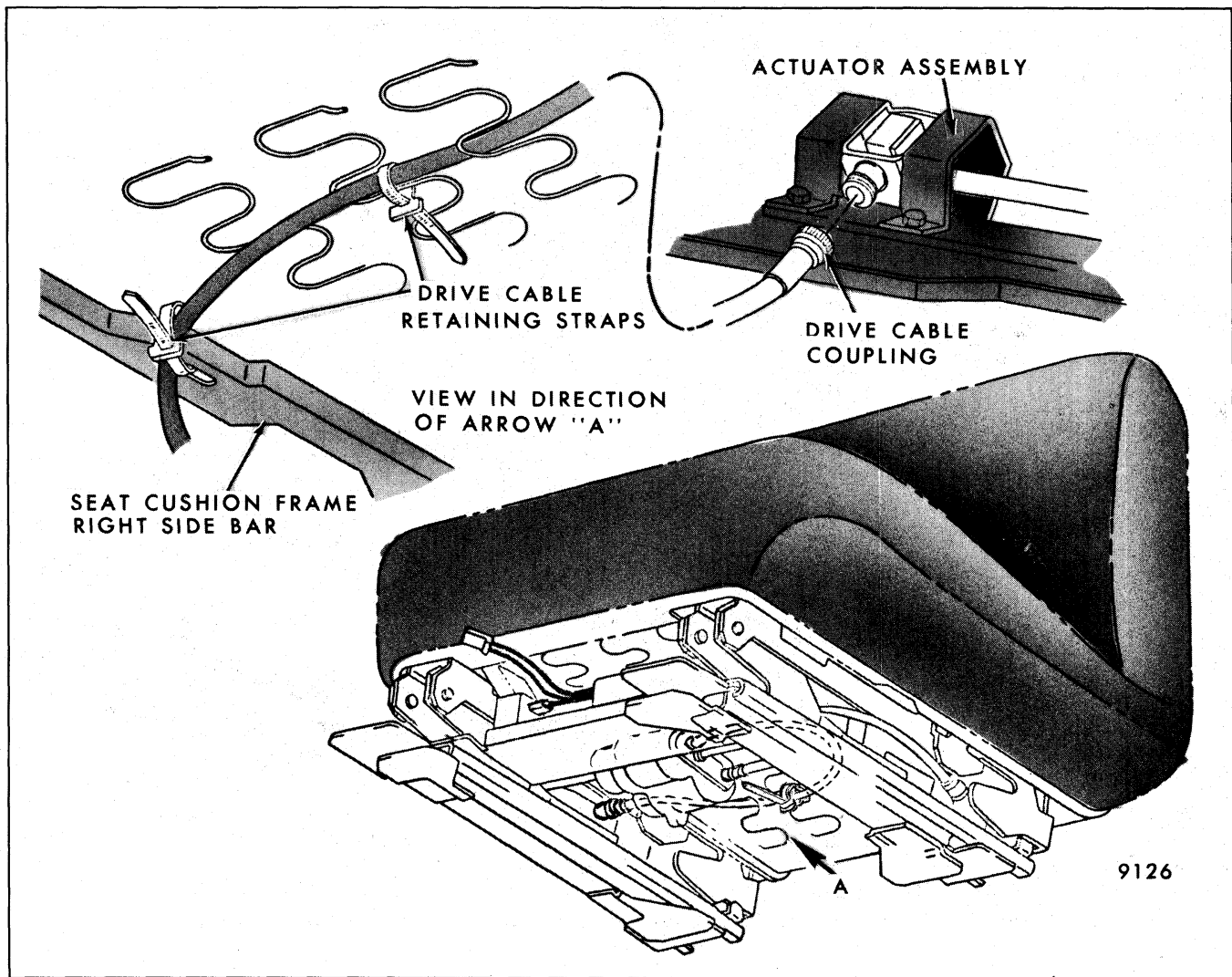


Fig. 9-43 - Front Seat Back Power Reclining Cable Routing

5. To install seat back finishing panel or seat back ash tray, reverse removal procedure.

Salon Bucket Seat Back Assembly - Removal and Installation

1. Remove front seat assembly from body as described under "Front Seat Assembly - Removal and Installation" and place seat on a clean protected surface.
2. Remove ash tray and finishing panel assembly as previously described (see Fig. 9-47).
3. Remove seat side upper panel from both sides of seat back and side upper panel outer reinforcement from outer side of seat back (Fig. 9-48).
4. Detach lower rear corners of seat back trim

cover from seat back frame sufficient to expose hinge-to-seat back attaching screws (Fig. 9-48).

5. Remove hinge-to-seat back attaching screws (Fig. 9-48) and remove seat back.
6. To install seat back assembly, reverse removal procedure.

Seat Back Reclining Hinge Assembly - Removal and Installation

The seat back reclining hinge assembly includes both inner and outer hinge with control rod welded to each hinge (see Fig. 9-49).

1. Remove seat back assembly as previously described under "Seat Back Assembly - Removal and Installation".

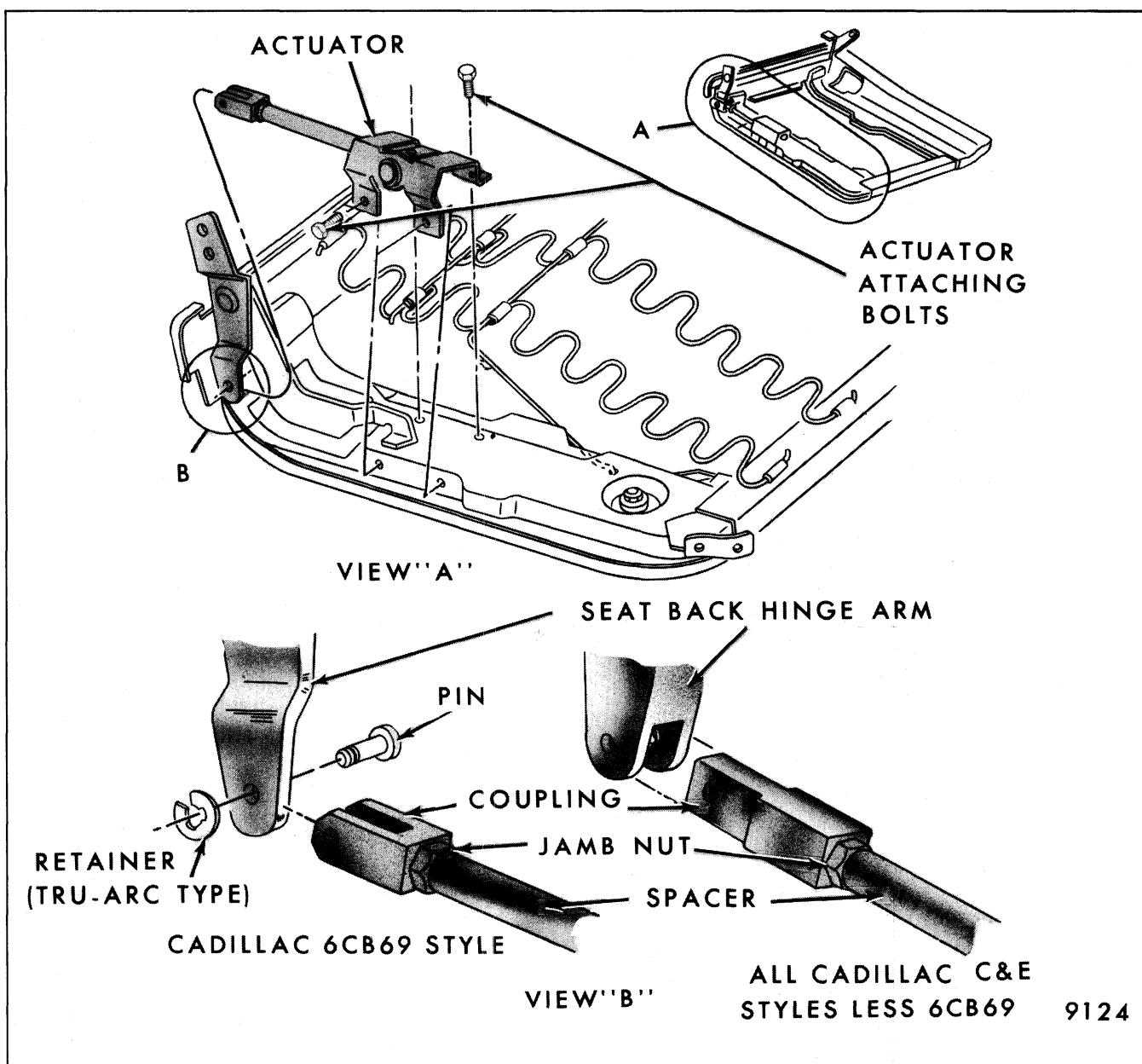


Fig. 9-44-Front Seat Back Power Reclining Actuator

2. With seat back removed, detach seat cushion trim sufficiently to gain access to reclining actuator rear attaching bolt and hinge-to-seat cushion frame attaching bolts (Fig. 9-49, Items 6 and 8).
3. At outboard side of seat, remove reclining actuator rear attaching bolt (Fig. 9-49, Item 6). At both sides of seat remove hinge-to-seat cushion frame attaching bolt (Fig. 9-49, Item 8); then disengage front of both hinges from hinge pin and remove hinge and control rod assembly from seat cushion.

4. To install seat back hinge and control rod assembly, reverse removal procedure.

Seat Back Reclining Actuator Unit

1. Remove seat assembly from body as described under "Front Seat Assembly - Removal and Installation" and place seat on a clean protected surface.
2. Detach outboard side of seat cushion trim cover

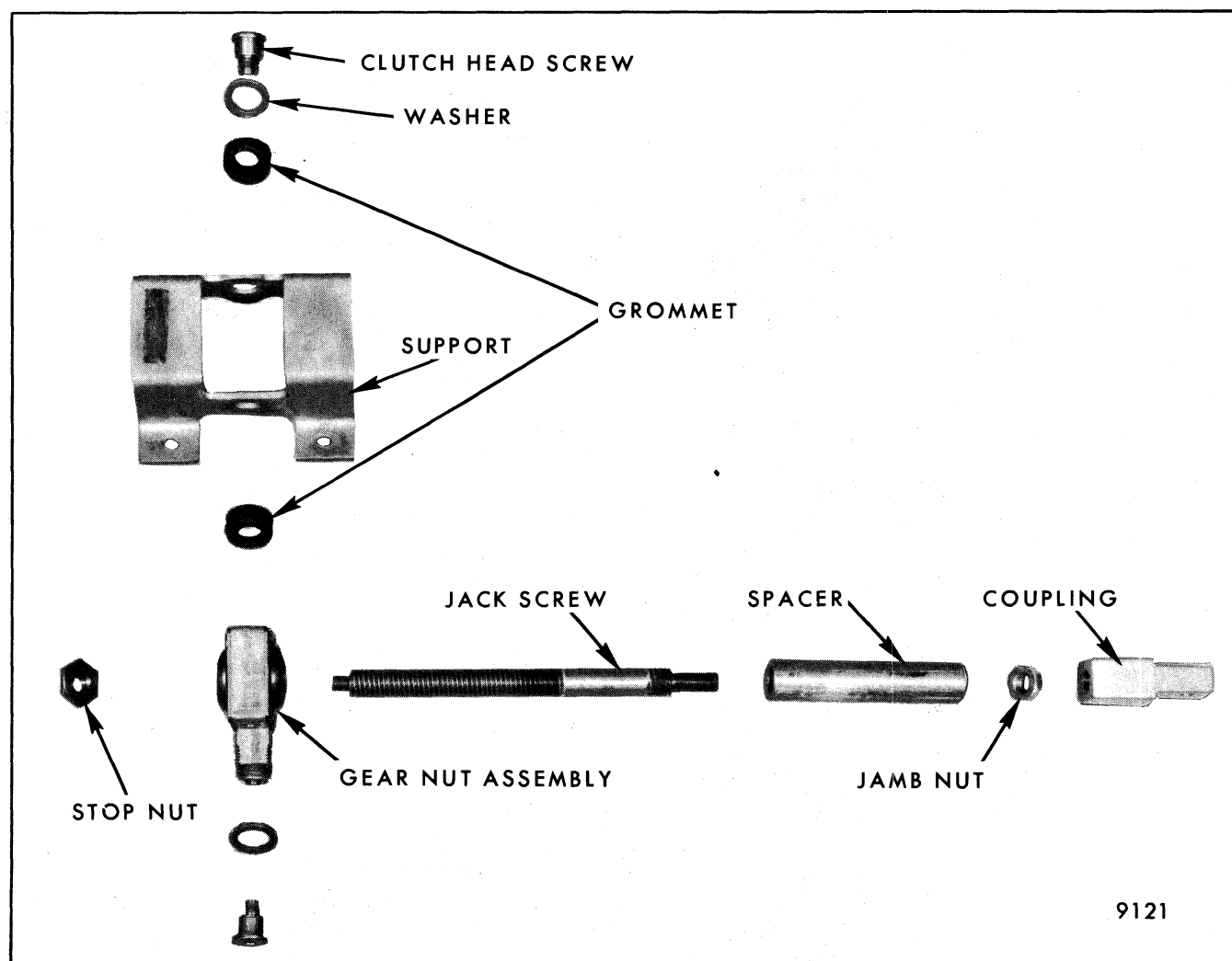


Fig. 9-45-Power Reclining Seat Back Actuator - Disassembly and Assembly

sufficiently to gain access to reclining actuator front and rear bolts (Fig. 9-49, Item 6); then remove actuator bolts and remove assembly from cushion frame.

3. To install reclining actuator assembly, reverse removal procedure.

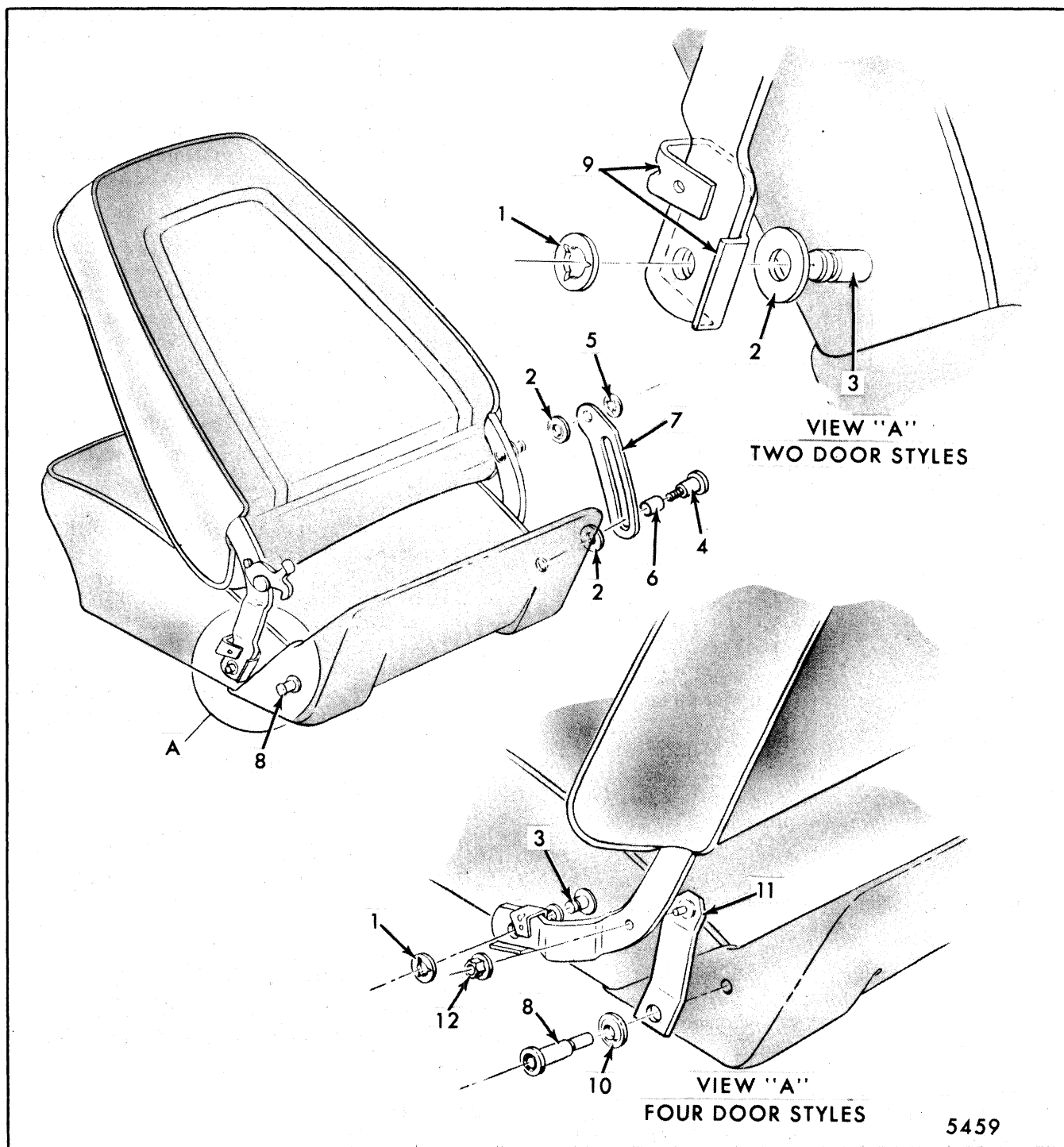
loaded reclining unit will return the seat back forward to normal position. When the control lever is released, the reclining unit maintains the seat back in desired position; however, the seat back can be pushed forward to normal position without actuating the control lever.

CUSTOM BUCKET SEAT - "A and X" Styles

The custom bucket seat incorporates an adjustable reclining seat back, which consists of a spring loaded type cylinder and plunger, and is located in the outboard side of the seat back frame. When the reclining unit control lever located at the outboard side of the seat cushion is raised, the unit is unlocked by means of a control cable and the seat back can be tilted rearward by applying rearward pressure on the seat back; or with no pressure on the seat back, the spring

Custom Bucket Seat Back Panels - Removal and Installation

1. Remove exposed screws (Fig. 9-50) securing lower portion of seat back upper panel.
2. Lift panel upward to disengage upper portion of panel from hinge brackets (Fig. 9-50) and remove finishing panel from seat back.
3. To remove seat back lower panel, remove panel attaching screws shown in Figure 9-50.



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Fig. 9-46-Seat Back Assembly - Standard Bucket Seats

- | | | | |
|--|---|----------------------------------|--|
| 1. Hinge Arm Retainer | 4. Inner Link Lower Attaching Shoulder Bolt | 7. Seat Back Inner Arm Link | 10. Striker-to-Support Washer |
| 2. Trim Protective Washers (Two-Door Style Only) | 5. Inner Link Upper Retainer | 8. Seat Back Lock Striker | 11. Seat Back Lock-Up Support |
| 3. Hinge Arm Pins (On Seat Cushion) | 6. Inner Link Lower Bolt Sleeve | 9. Seat Back Panel Lower Support | 12. Lock-Up Support to Seat Back Frame Hinge Arm Attaching Nut |

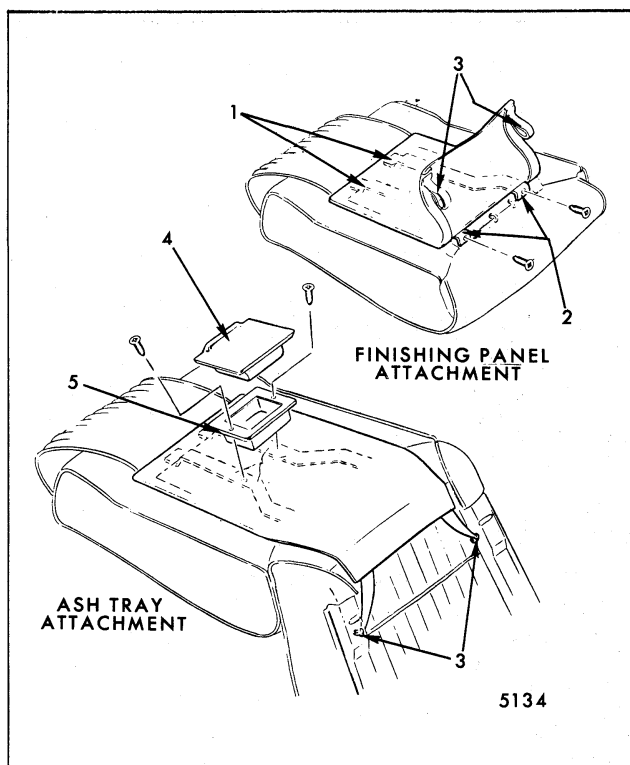


Fig. 9-47-Salon Bucket Seat Back Ash Tray and Finishing Panel

- | | |
|------------------------------------|-----------------------------------|
| 1. Finishing Panel Upper Retainers | 3. Finishing Panel Elastic Straps |
| 2. Finishing Panel Lower Retainers | 4. Ash Tray |
| | 5. Ash Tray Housing |

4. To install seat back finishing panel or seat side panels, reverse removal procedure.

Custom Bucket Reclining Seat Back Assembly - Removal and Installation

NOTE: The reclining hinge assembly which includes both right and left hinge with a control rod welded to both hinges is an integral welded on component of the seat back frame.

1. On styles with console between bucket seats, remove bucket seat assembly from car as described under "Front Seat Assembly - Removal and Installation".
2. Remove seat side lower panel as previously described (see Fig. 9-50).
3. Remove reclining control handle and cable attaching screws (Fig. 9-51) and detach handle from hinge pin.
4. Remove seat back hinge arm retainer (Fig. 9-51) on both sides of seat.

5. On inboard side of seat disengage seat back inboard hinge arm, then disengage outboard hinge arm from hinge pin.

NOTE: If seat back frame and reclining hinge assembly is being replaced, parts such as reclining actuator, reclining control handle, control cable and supports must be removed and installed on new seat back frame.

6. To install seat back assembly, reverse removal procedure. If hinge arm retainer has been damaged during removal, install new retainer using 5/8" socket. Check operation of reclining seat back to full limits of travel.

Custom Comfort Seat Back Reclining Control Handle and Remote Control Cable - Removal and Installation

1. To remove reclining actuator control handle, remove seat back upper and lower panels (Fig. 9-50). Remove reclining control handle attaching screws (Fig. 9-51), disengage handle from control cable and remove handle.
2. To remove remote control cable, remove seat back upper and lower panels (Fig. 9-50); then remove cable upper support screw and disengage remote cable from reclining actuator arm (Fig. 9-51). Remove remote cable lower support, disengage cable from control handle (Fig. 9-51) and remove cable from seat.
3. To install seat back reclining control handle or remote control cable, reverse removal procedure.

FRONT SEAT BACK MANUALLY OR ELECTRICALLY OPERATED LOCK (Right or Left) - Two-Door Styles with Full Width, 60-40 or 40-40 Seats

Description

All two-door styles are equipped with either manually operated front seat back locks or optional (on "A, B, C and E" styles) electrically operated seat back locks. The manually operated seat back locks on "F, A and X" body styles are operated by a control lever at the lower rear outboard corner of the seat back; on "B, C and E" styles the manually operated lock is operated by a control handle on the upper outboard side of the seat back. The electrically operated seat back locks are operated by an electrical solenoid attached to the seat back lock frame. When

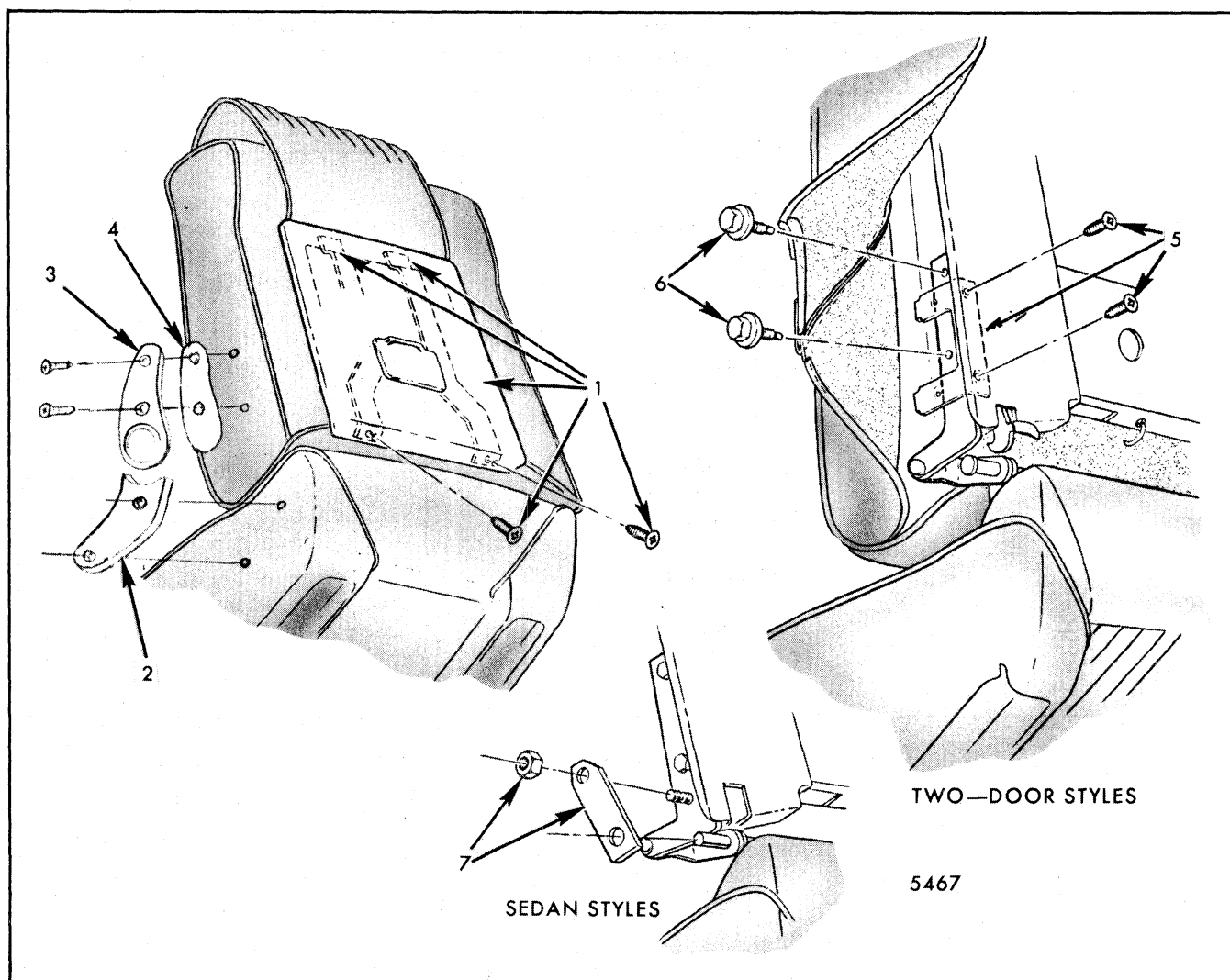


Fig. 9-48-Salon Bucket Seat Reclining Back Hinge - Passenger Seat Shown - Oldsmobile "A" Styles

- | | | |
|--|--|--|
| 1. Seat Back Finishing Panel, Lower Attaching Screws and Upper Hanger Brackets | 2. Seat Side Lower Panel | 5. Seat Side Upper Panel Support |
| | 3. Seat Side Upper Panel | 6. Hinge-to-Seat Back Attaching Screws |
| | 4. Seat Side Upper Panel Reinforcement | 7. Seat Back Lock-Out Bar - Sedan Styles |

either front door is opened, a jamb switch at the front body hinge pillar energizes the solenoid at both seat back locks which unlocks both seat backs. When

both doors are closed, the solenoids are de-energized and return springs in the solenoid return the lock to a locked position.

**ELECTRIC SEAT BACK LOCK DIAGNOSIS CHART - TWO-DOOR STYLE FULL WIDTH,
60-40, 50-50 OR 40-40 SEATS**

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat back lock does not lock when doors are closed.	<p>1. Current at actuator solenoid does not cut off - jamb switch remains open.</p> <p>2. Seat back relay contacts sticking.</p> <p>3. Seat back does not return to upright position far enough to trip lock into locked position. Check for excessive trim build-up; also check inboard bumper clearance.</p>	<p>1. Refer to Electrical Checking Procedure - where required, install new jamb switch.</p> <p>2. Refer to Electrical Checking Procedure - where required, install new relay.</p> <p>3. Specified inboard bumper clearance 1/16" - where required install thinner bumper. Locking effort applied rearward at upper outboard corner of seat back is 0-10 lbs. maximum.</p>
2. Seat back lock will not unlock when door(s) are open.	<p>1. No current at actuator solenoid - blown fuse, defective jamb switch or seat back relay, or short in wiring.</p> <p>2. Bind in lock or lock linkage.</p>	<p>1. Refer to Electrical Checking Procedure.</p> <p>2. Locate and eliminate bind or, where required, install new lock assembly.</p>
3. Seat back lock unlocks but solenoid flutters or solenoid circuit breaker cuts in and out.	<p>1. Bind in lock or linkage which does not allow solenoid plunger to completely deactivate pull in coil.</p> <p>2. Actuator solenoid plunger is not completely deactivating pull in coil with no bind present in lock or linkage. Lock operates okay manually.</p>	<p>1. Locate bind or interference and eliminate, or where required install new lock.</p> <p>2. Check solenoid as described under "Electrical Checking Procedure" - Check if solenoid is adjusted properly on lock - see "Seat Back Electric Lock Solenoid and Support Assembly" - Step 3 and 4. Where required replace solenoid assembly.</p>

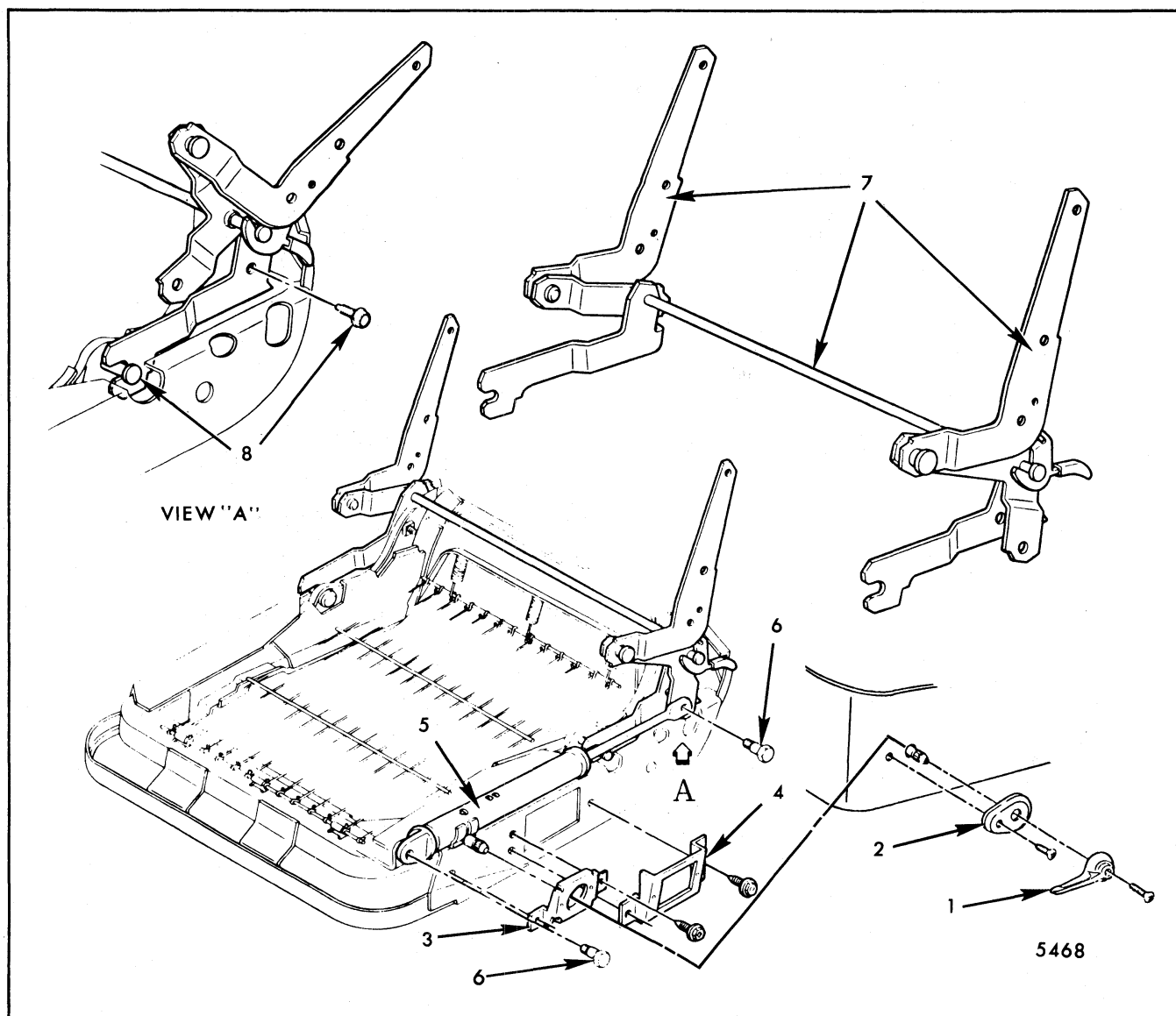
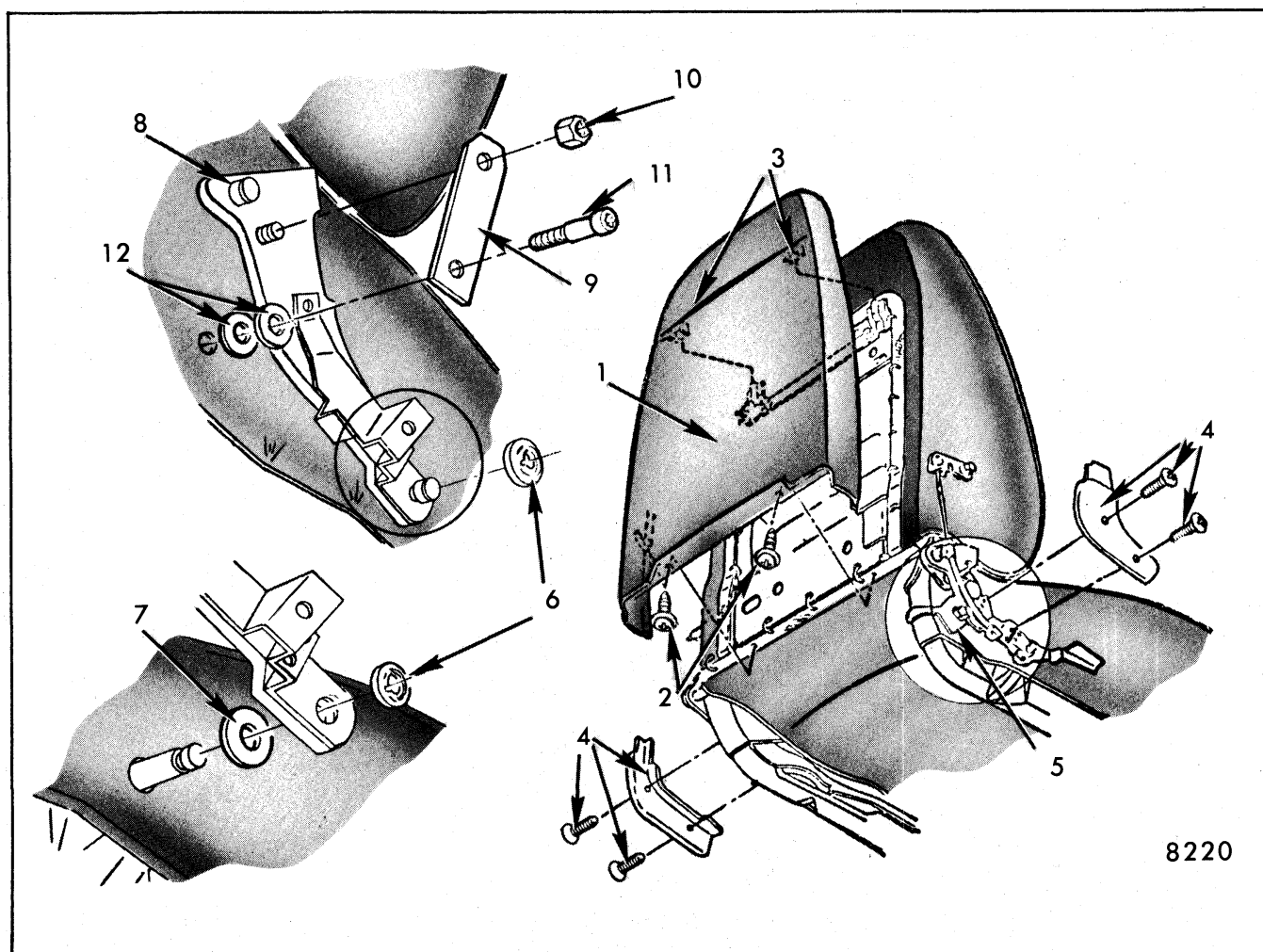


Fig. 9-49-Salon Bucket Seat Reclining Actuator and Hinge - Oldsmobile "A" Styles

- | | | | |
|--|--|---|---|
| 1. Reclining Control Handle | 4. Switch and Escutcheon Support for Power Seat Adjuster | 5. Reclining Actuator Assembly | 8. Reclining Hinge and Control Rod Attachment to Seat Cushion Frame |
| 2. Reclining Control Handle Escutcheon | | 6. Reclining Actuator Attaching Bolts | |
| 3. Reclining Control Handle Escutcheon Support | | 7. Reclining Hinge and Control Rod Assembly | |



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Fig. 9-50-Custom Bucket Seat Back - Passenger Seat Shown

- | | | | |
|--|---|--|---|
| 1. Seat Back Upper Panel | 5. Seat Back Lock | 9. Lock-Out Bar (Four-Door Styles) | 11. Lock-Out Bar-to-Cushion Frame Attaching Bolt (Four-Door Styles) |
| 2. Back Panel Attaching Screws | 6. Hinge Retainer | 10. Lock-Out Bar-to-Hinge Arm Attaching Nut (Four-Door Styles) | 12. Lock-Out Bar-to-Cushion Frame Attaching Bolt Spacers (Four-Door Styles) |
| 3. Back Panel Upper Hanger Brackets | 7. Trim Protector Washer | | |
| 4. Seat Side Lower Panels and Attaching Screws | 8. Hinge Control Rod (Welded to Hinges) | | |

FRONT SEAT BACK MANUAL OR ELECTRIC OPERATED LOCK - Two-Door Styles with Full Width, 60-40 or 40-40 Seats

Removal and Installation

- On seats with full seat back panel or detachable seat back trim panel, remove hog rings securing trim along bottom and sides of trim.
- On seats with one piece (envelope type) trim cover remove front seat back assembly from front seat cushion assembly as previously described.
- Remove front seat back outer side panel and side panel lower support, where present.
- On seats with electrically operated locks, remove manual override handle and escutcheon.
- Remove hog rings securing seat back front and rear trim facings and foam pad facing along bottom of seat back; then turn up trim and carefully pull out foam pad sufficiently to gain access to lock attaching bolts (Fig. 9-52 or 9-53).
- On manually operated seat back lock, disengage lock connecting rod clip (Fig. 9-52) and detach

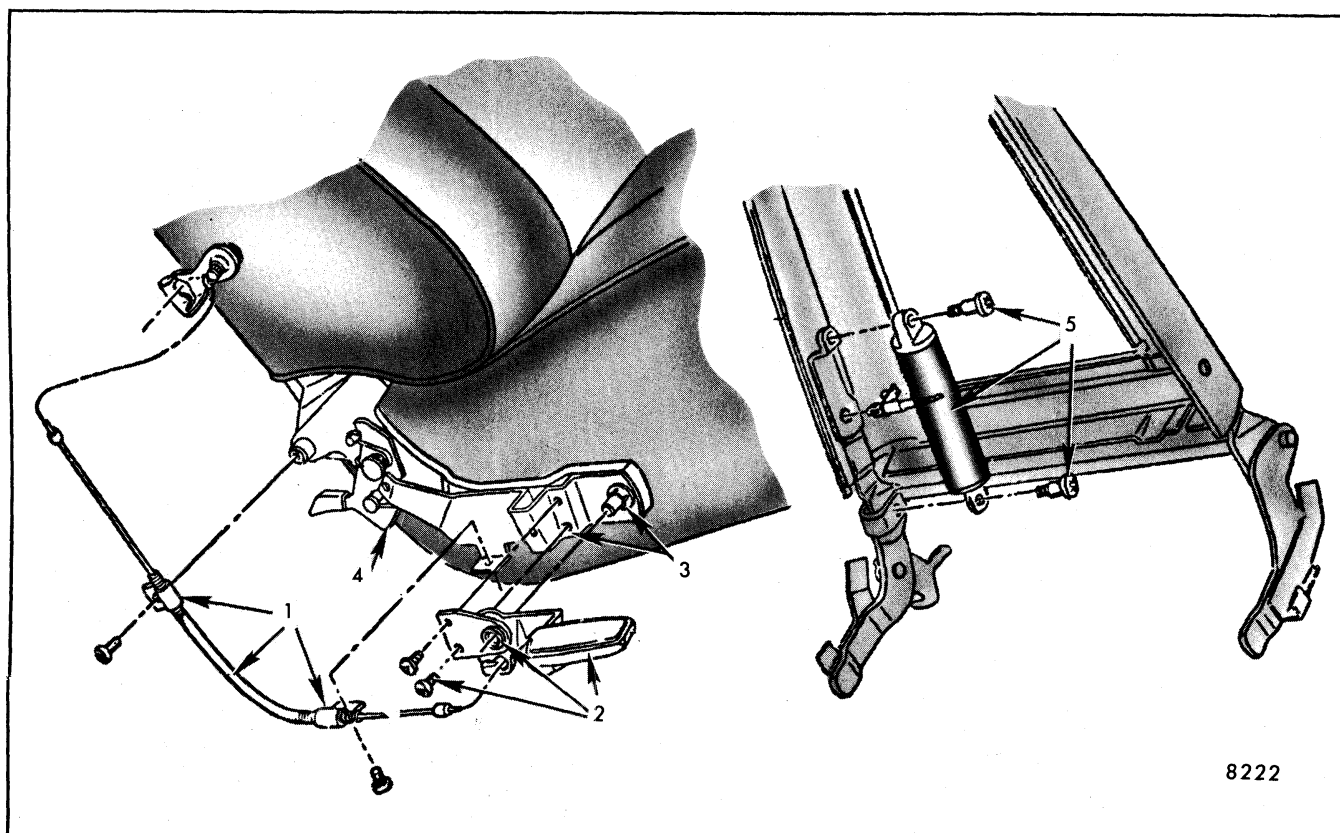


Fig. 9-51-Custom Bucket Seat Back Reclining Actuator Assembly and Remote Control - Passenger Seat

- | | | | |
|---|--|--|---|
| 1. Reclining Actuator Remote Control Cable and Supports | 2. Reclining Control Handle and Attaching Screws | 3. Seat Back Outer Hinge Arm Pin, Hinge Arm and Retainer | 4. Seat Back Lock |
| | | | 5. Reclining Actuator and Attaching Shoulder Screws |

rod from lock. To disengage clip it is usually necessary to damage or break clip. On electrically operated seat back lock, disconnect feed connector from lock solenoid.

- Remove seat back lock attaching bolts (Fig. 9-52 for manual lock, Fig. 9-53 for electric lock); then remove lock assembly from seat back.
- To install, reverse removal procedure. If rod to lock retaining clip is damaged, install new clip. Check for proper operation of seat back lock.

NOTE: The manually operated seat back locks should lock with no more than 10 pounds rearward effort applied at the top outboard corner of the seat back. The electrically operated seat back locks should remain locked after either door is opened, then closed.

FRONT SEAT BACK MANUALLY OPERATED LOCK CONTROL AND LOCK ROD - "B, C and E" Two-Door Styles with Full Width, 60-40 or 40-40 Seats with Manually Operated Seat Back Locks

Removal and Installation

- On styles with one piece (envelope type) seat back trim cover remove front seat back assembly as previously described. Remove seat back side panel where present. Remove hog rings securing trim cover at bottom of seat back and pull trim up sufficiently to gain access to lock and lock control.
- On styles with full seat back panel, remove lock control handle; then remove seat back panel.

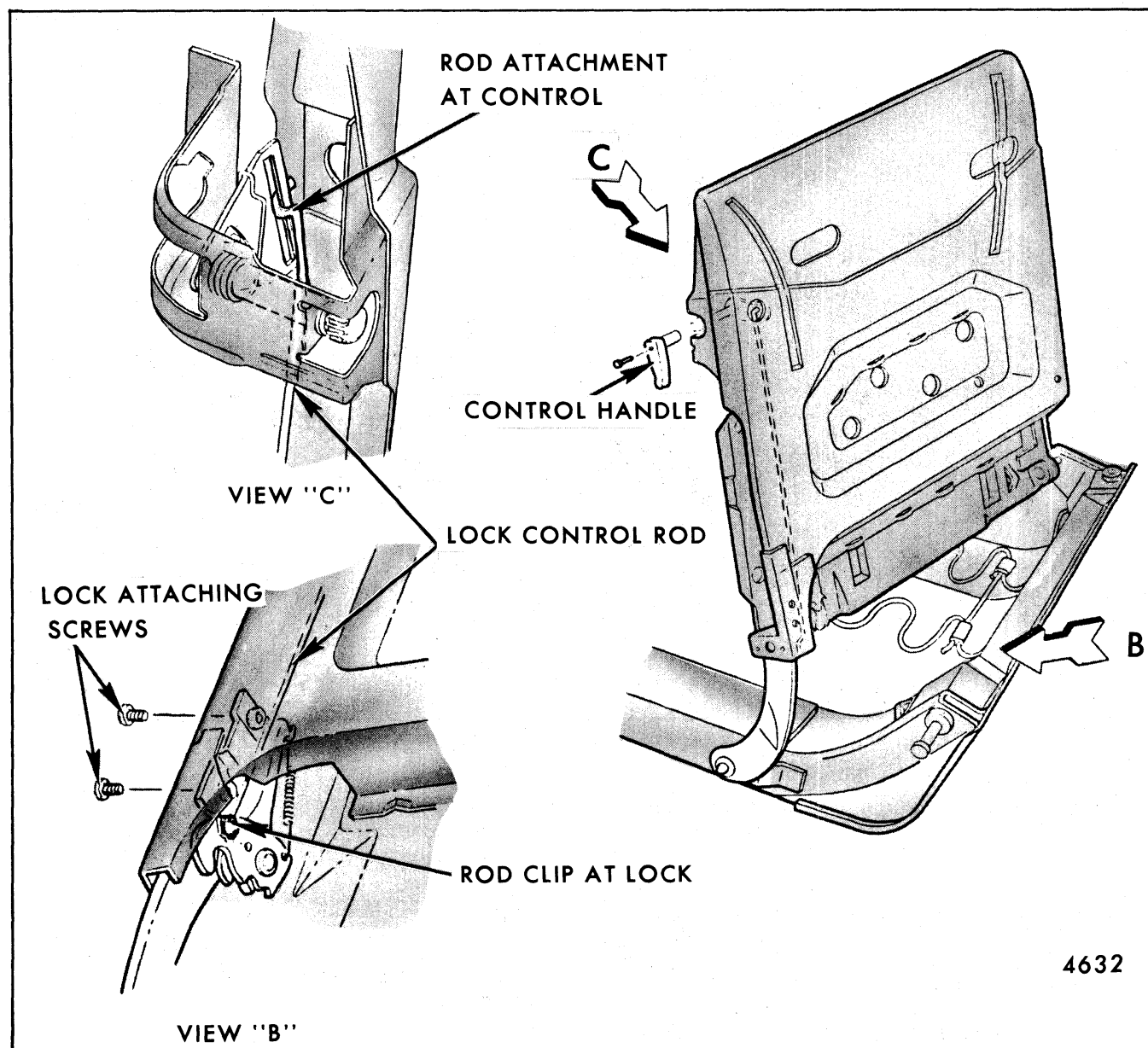


Fig. 9-52-Front Seat Back Manually Operated Lock - "B, C and E" Two-Door Styles, Full Width, 60-40 or 40-40 Seats

3. On styles with seat back panel or detachable rear trim facing, remove hog rings securing seat back panel or trim facing along bottom and sides of seat. If removing lock, control-to-lock rod on any style or lock control on Cadillac styles turn back seat trim sufficiently to gain access to lock control. If removing lock control on any style except Cadillac remove seat back trim cover and foam pad assemblies.
4. To remove seat back lock to control connecting rod, disengage rod clip at lock (Fig. 9-52, View "B"); then rotate rod counterclockwise on driver's seat back or clockwise on passenger's seat back to disengage hooked upper end of rod from slot in control plate and remove connecting rod (see Fig. 9-52).
5. To remove seat back lock control on Cadillac styles, remove control attaching screws and remove control. To remove lock control on all styles except Cadillac, scribe position of control assembly on seat back side bar. Using a spot weld cutter tool J- 8943-01 or equivalent, drill out three spot welds securing lock control and remove control.
6. To install lock control on Cadillac styles, reverse

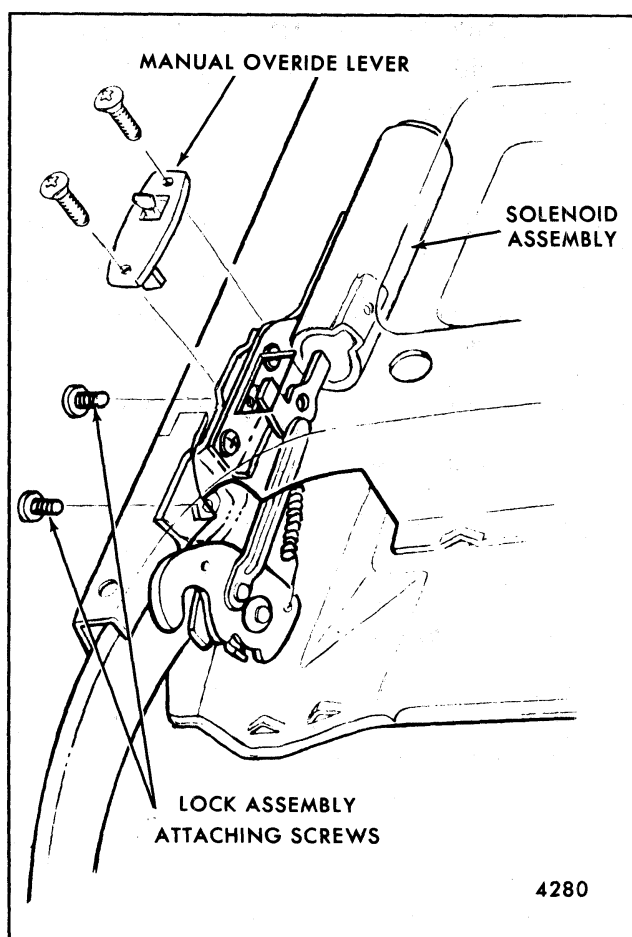


Fig. 9-53-Front Seat Back Electrically Operated Lock - "A, B and C" Two-Door Styles, Standard Full Width Seat

removal procedure. To install lock control on all styles except Cadillac, position and clamp new control assembly to seat back frame side bar in SAME position as original control assembly. Braze new control assembly to seat back frame side bar at the three original weld locations.

7. To install control-to-lock rod, position rod up through seat back frame bar; then insert upper hook end of rod into slot in control plate and rotate rod clockwise on driver's seat back or counterclockwise on passenger's seat back to fully engage hook end of rod in slot of control plate. Engage lower end of rod to lock hook and install retaining clip.

NOTE: If clip is damaged or does not retain properly, install new clip.

8. After assembly, check for proper operation of seat back lock, the seat backs should lock with no more than 10 pounds of rearward effort applied at the top outboard corner of the seat back.

SEAT BACK ELECTRIC LOCK SOLENOID AND SUPPORT ASSEMBLY - Two-Door Styles with Full Width, 60-40 or 40-40 Seats

Removal and Installation

1. Remove front seat back electric lock assembly with attached solenoid and support from seat as previously described.
2. Remove position lock screw and two solenoid support-to-lock attaching screws; then disengage solenoid plunger bar from lock link (Fig. 9-54) and remove assembly from lock.
3. Grind or file off raised portion of locking depression from lock frame.

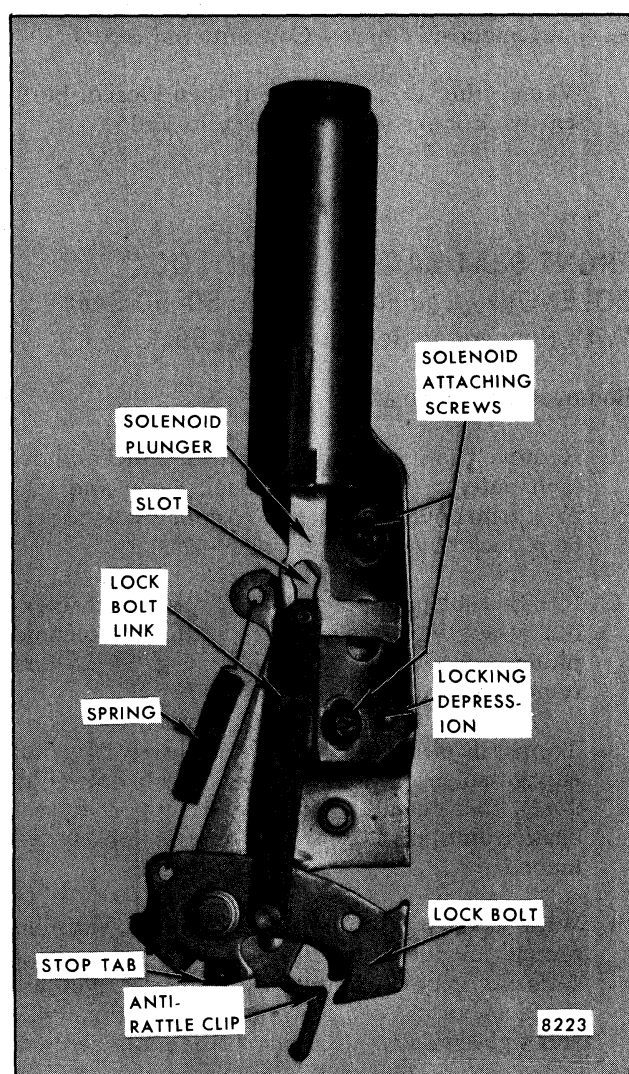


Fig. 9-54-Front Seat Back Electric Lock Solenoid and Support Assembly - All Two-Door Styles with Standard Full Width, 60-40 or 40-40 Seats

4. To install solenoid and support assembly, engage solenoid plunger bar to lock link; then install loosely two solenoid support-to-lock attaching screws (Fig. 9-54). With lock hook tight against stop tab (see Fig. 9-54) extend solenoid plunger bar all the way out of solenoid; then adjust solenoid support until the lock link rivet just contacts bottom of slot in solenoid plunger bar (see Fig. 9-54) and tighten securely solenoid support attaching screws.

NOTE: Carefully drill a new position lock screw hole (9/64") through both solenoid support and lock frame and install a self-tapping screw to securely lock solenoid in position on lock frame.

5. Check operation of both electric actuated seat back locks. If either lock does not lock or unlock properly refer to "Electric Seat Back Lock Trouble Diagnosis Chart - Conventional Seats".

When either door is opened, then closed, both seat back locks should remain locked.

FRONT SEAT BACK ELECTRIC LOCK SOLENOID - Cadillac Eldorado 50-50 Seat With Passenger Reclining Seat Back

Removal and Installation

1. Remove passenger seat outer trim panel and detach outer portion of seat back panel and seat back trim cover sufficiently to gain access to seat back lock solenoid (see Fig. 9-42).
2. Remove solenoid position lock screw and solenoid attaching screws, then disengage solenoid plunger from lock bolt link (Fig. 9-42) and remove solenoid from seat back.
3. To install electric lock solenoid assembly, first engage solenoid plunger bar to lock link (Fig. 9-42), then install solenoid and support-to-seat back frame with attaching screws loosely attached.
4. With lock bolt fully down, extend solenoid plunger all the way out of solenoid; then adjust solenoid up or down until the lock link rivet just contacts bottom of slot in plunger (see Fig. 9-42) and tighten solenoid support attaching screws.
5. Carefully drill a new lock screw hole (9/64") through both solenoid support and seat back frame hinge arm lock and solenoid support; then install self-tapping lock screw (see Fig. 9-42).

FRONT SEAT BACK HEAD RESTRAINT - Full Width, 60-40, 50-50 or 40-40 Seat (Driver or Passenger Side)

Description

Head restraints for the standard full width, 60-40, 50-50 or 40-40 seat are single post type, which can be adjusted to two positions (low or high). To remove head restraints it is necessary to follow the procedure described below:

NOTE: A head restraint lock releasing tool, shown in Figure 9-55, can be made from 20 gauge (.035) steel stock. The edge of this tool will release the spring lock tab on "B, C, E and D" body styles; the flat surface will release the spring lock tab on "A and X" body styles.

Removal and Installation

1. Detach the shoulder strap loop guide from the guide escutcheon as described under "Shoulder Belt Guide - Removal and Installation" and illustrated in Figure 9-7.
2. Raise head restraint past full up detent position

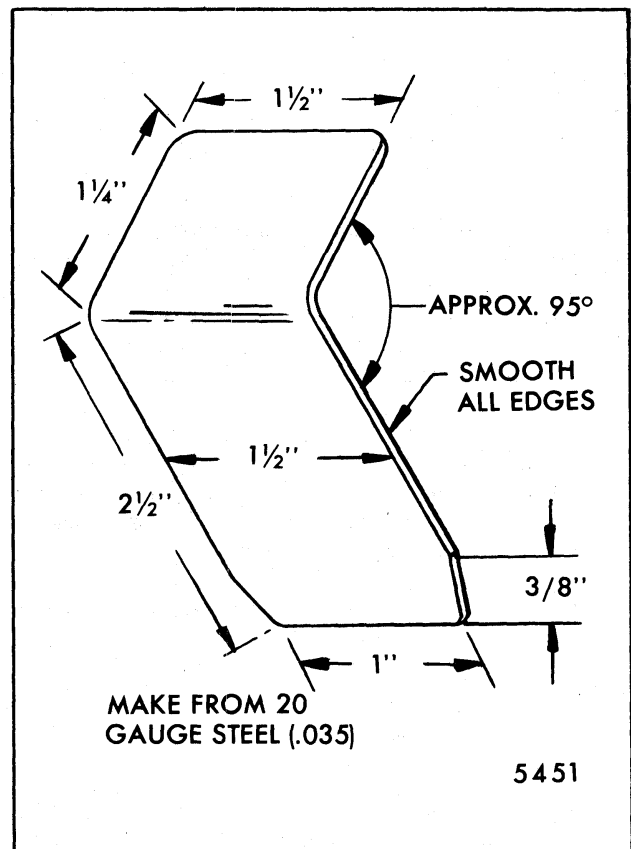


Fig. 9-55-Head Restraint Anti-Removal Lock Releasing Tool

to anti- removal lock position; then push head restraint downward approximately $3/8$ ".

3. Insert lock release tool (Fig. 9-55) or suitable flat piece of metal $1-9/16$ inches wide down front surface of head restraint post approximately $2-1/2$ inches; then lift head restraint out of guide tube.
4. To install head restraint, insert post into guide and push down to full down position. Check that lock spring engages and prevents head restraint from being removed.

FRONT SEAT BACK HEAD RESTRAINT LOCK AND ESCUTCHEON ASSEMBLY - Full Width, 60-40, 50-50 and 40-40 Seats

Removal and Installation

1. Remove head restraint as previously described.
2. Remove lock and escutcheon assembly attaching screws and remove lock and escutcheon (Fig. 9-56).
3. To install, reverse removal procedure. Check operation of head restraint.

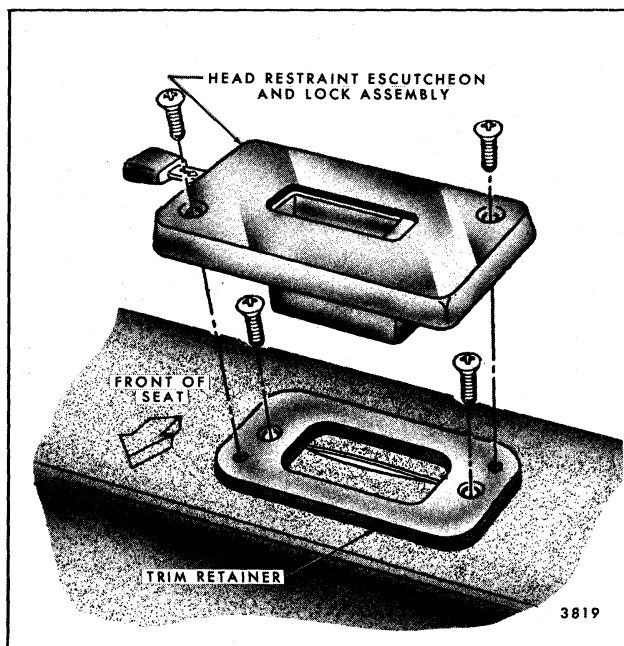


Fig. 9-56-Front Seat Back Head Restraint Retainer, Lock and Escutcheon - Full Width, 60-40, 50-50 and 40-40 Seats

FRONT SEAT BACK HEAD RESTRAINT GUIDE TUBE - Full Width, 60-40, 50-50 and 40-40 Seats

The front seat back head restraint guide tube is a plastic tube inserted through slots in a guide tube support which is an integral part of the seat back frame. The guide tube support assembly, which incorporates a riveted-on tension spring, is welded to the seat back frame.

Removal and Installation

1. Remove front seat back and head restraint lock and escutcheon assembly as previously described. Remove trim retainer (see Fig. 9-56).
2. On seat backs with one piece (envelope type) seat back trim assembly, remove seat back assembly as previously described; then as a bench operation remove hog rings securing trim at bottom of seat back and pull up trim sufficiently to gain access to head restraint support or guide tube. On seat backs with seat back panel or detachable rear trim facing, remove seat back panel and detach back trim sufficiently to gain access to head restraint support or guide tube.
3. Remove screw securing guide tube and slide guide tube out of support (Fig. 9-57).
4. To install head restraint guide tube, reverse removal procedure.

FRONT SEAT CENTER ARMREST, CURTAIN AND LINKAGE - Front Seat with Standard Full Width Seat Back

Removal and Installation

1. Place center armrest in down position.
2. To remove armrest curtain, pull curtain forward as far as possible; then remove armrest-to-linkage front attaching screw (see Fig. 9-58) from both sides of armrest. Lift up lower portion of armrest sufficiently to gain access to and remove hog rings securing upper end of curtain; then remove armrest-to-linkage attaching.
3. To remove armrest, less linkage and curtain, pull curtain forward as far as possible; then remove armrest-to-linkage screws from both sides of armrest and remove armrest (Fig. 9-58).
4. To remove armrest and linkage assembly, first

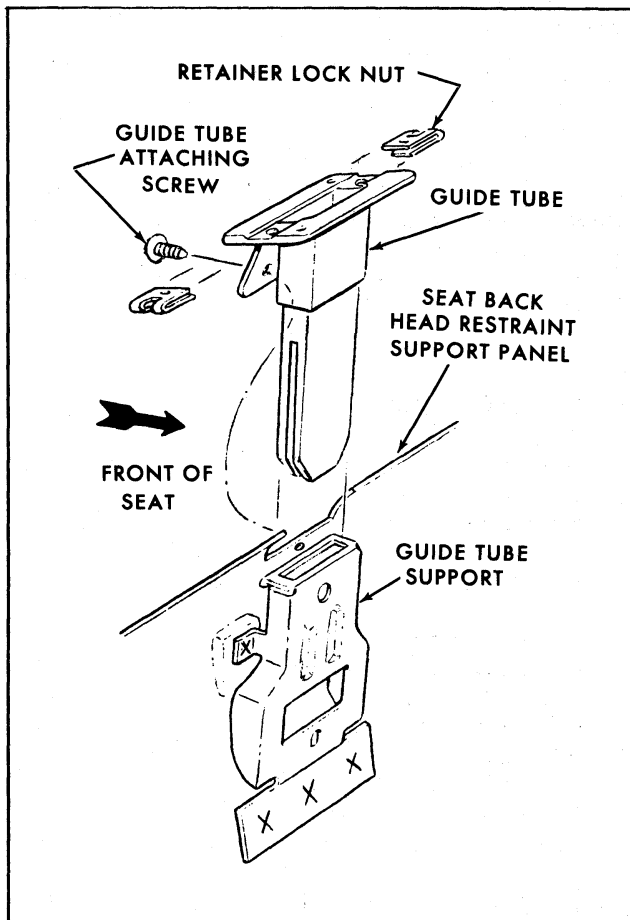


Fig. 9-57-Head Restraint Guide Tube Typical of All Conventional Seats

detach lower end of curtain from armrest as described in step 1. Remove linkage attaching screws (see "5" in Fig. 9-58); then disengage upper tabs of linkage from armrest support and lift armrest and linkage assembly upward to disengage lower tabs from slots in support and remove assembly from seat.

5. To install front seat center armrest curtain, armrest or linkage, reverse removal procedure.

FRONT SEAT CENTER ARMREST AND CURTAIN ASSEMBLY - Front Seat with Notch Down Seat Back

Removal and Installation

1. Lower armrest to within approximately two inches of full-down position.
2. Carefully pull curtain back sufficiently to remove screws securing center armrest to linkage, shown at "1" in Figure 9-59, and loosen

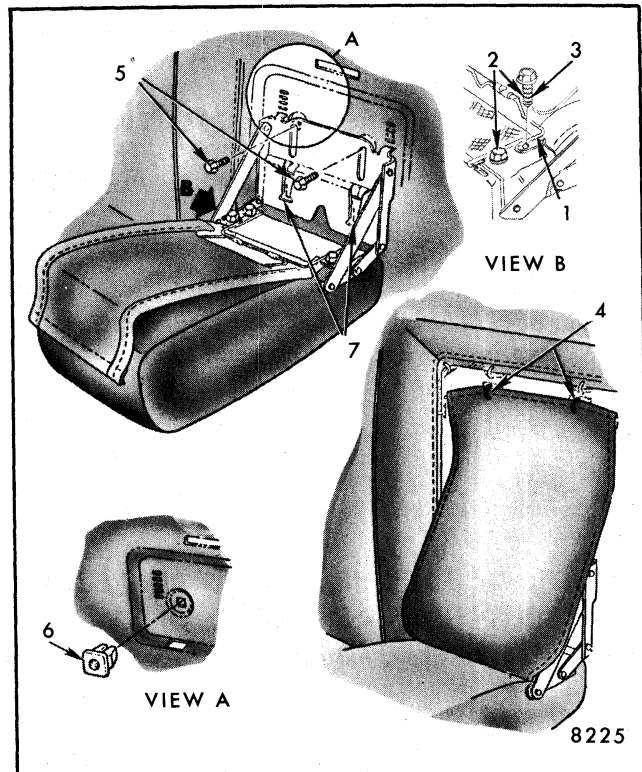


Fig. 9-58-Front Seat Back Center Armrest - Front Seat with Standard Full Width Seat Back

- | | |
|---|--|
| 1. Curtain Lower Retaining Wire and Spring | 4. Curtain Upper Retaining Hog Rings |
| 2. Armrest-to-Linkage Attaching Screws | 5. Armrest Linkage Attaching Screws |
| 3. Armrest-to-Linkage Front Attaching Screw | 6. Armrest Linkage Attaching Screw Nut |
| | 7. Location of Linkage Lower Support Slots |

outer screws securing curtain lower retainer to armrest (Fig. 9-59).

3. Disengage armrest from support linkage and turn armrest upside-down on trim panel finishing cover. Remove staples, indicated at "7" in Figure 9-59, securing armrest curtain upper retainer (Fig. 9-59); then remove armrest and curtain from armrest frame assembly.
4. To install, reverse removal procedure.

FRONT SEAT CENTER ARMREST ASSEMBLY - Front Seat with Notch Down Seat Back and 60-40 Seat

Removal and Installation

1. Place armrest in up position.
2. Working between armrest and seat back, use a

flat-bladed tool to carefully pry out serrated fastener, shown at "2" in Figure 9-59, at both sides of armrest on notch down seat or right side on 60-40 seat. On left side of 60-40 seat snap off plastic cover, shown at "4" in Figure 9-59.

3. Remove armrest assembly attaching screws, shown at "3" in Figure 9-59, then remove armrest and linkage assembly from seat.

NOTE: If washers are present between armrest linkage and linkage supports on seat (Fig. 9-59), note location and number of washers used and reinstall in same position. Washer(s) are used to align armrest to front seat back(s).

4. To install, reverse removal procedure. Prior to installing serrated fasteners, shown at "2" in Figure 9-59, check alignment and operation of armrest. Where necessary to align armrest with seat back(s) install washer(s), as required, be-

tween armrest support and support on seat (Fig. 9-59).

FRONT SEAT BACK CENTER ARMREST AND SUPPORT - Cadillac 50-50 Driver's and Passenger's Seat

Removal and Installation - Refer to Fig. 9-60

1. Place center armrest in down position.
2. To remove armrest less support, lift up upper portion of armrest close-out flap to disengage from retainer on seat back frame.
3. Remove armrest-to-support attaching screws and remove armrest.
4. To remove armrest support remove armrest support-to-seat back frame attaching nuts; then lift

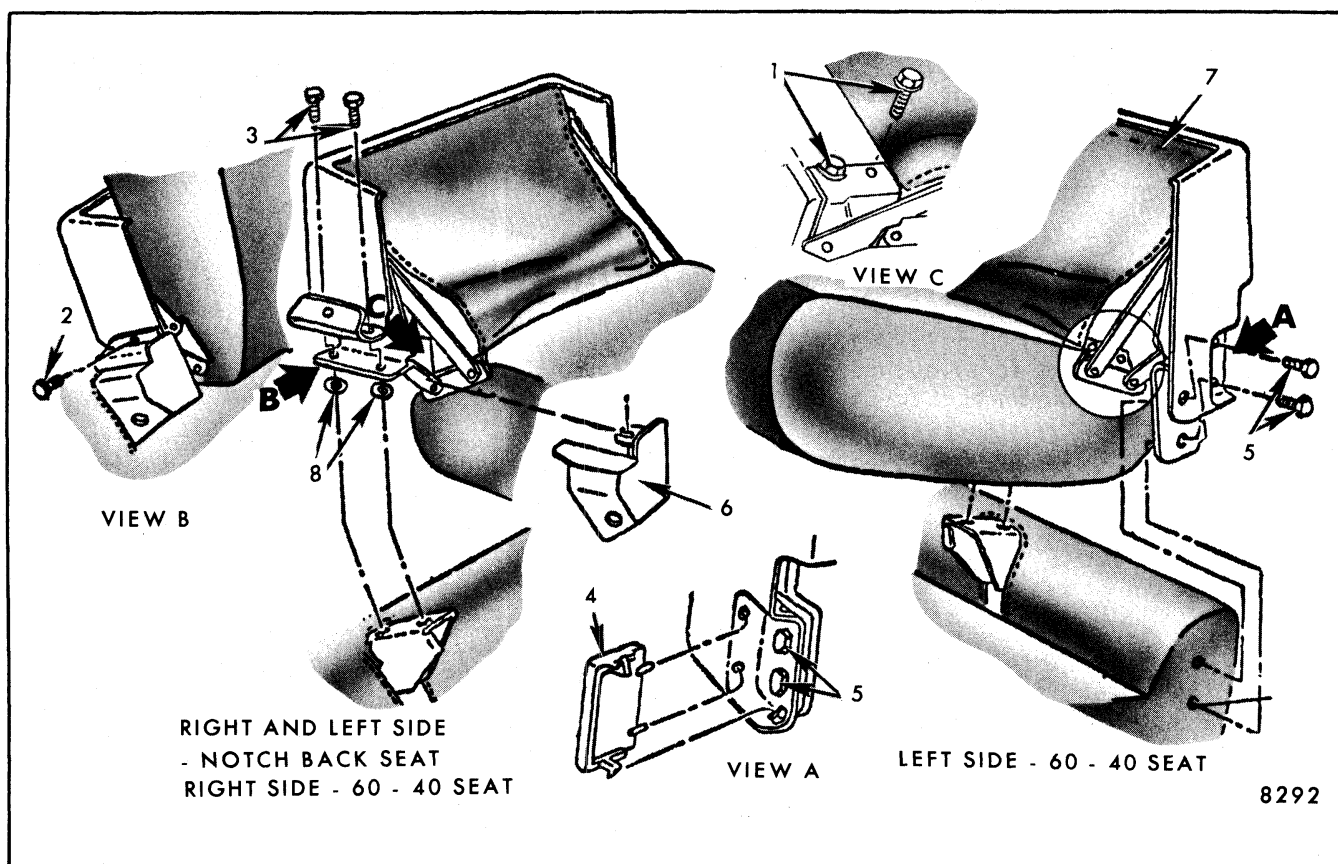


Fig. 9-59-Front Seat Center Armrest - Full Width Notch Down and 60-40 Seat

- | | | | |
|--|--|---|--|
| 1. Armrest-to-Linkage Attaching Screws | 3. Armrest Assembly-to-Seat Cushion Frame Attaching Screws | 5. Armrest Assembly-to-Seat Cushion Frame Attaching Screws (Left Side-60/40 Seat) | 6. Center Hinge Cover |
| 2. Serrated Fastener (Plastic) for Securing Screw Finishing Flap | 4. Trim Finishing Cover | | 7. Staples Securing Armrest Curtain Retainer |

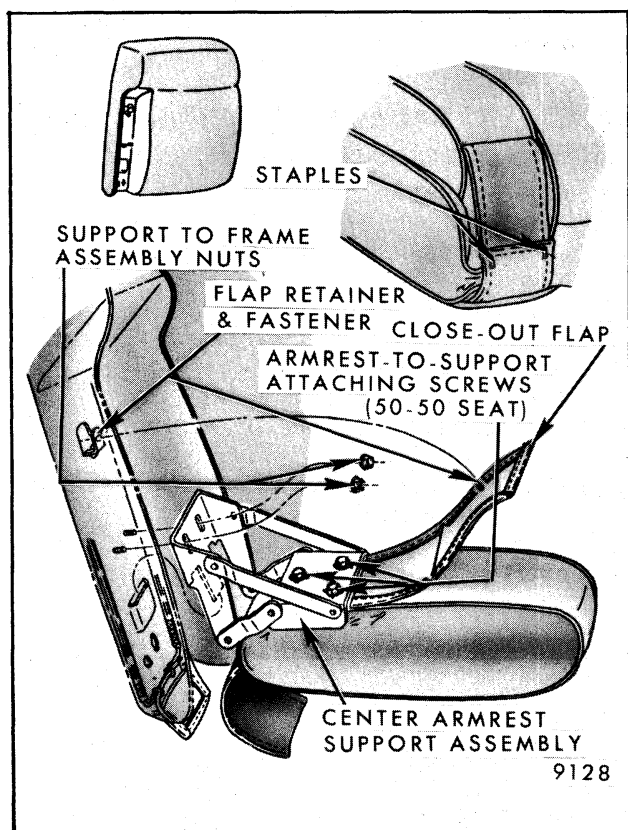


Fig. 9-60-Front Seat Back Center Armrest - Cadillac 50-50 Driver's and Passenger's Seat

armrest support upward to disengage tab on support from slot in seat back frame.

5. To install armrest support and armrest, reverse removal procedure.

FOOTREST ASSEMBLY - Cadillac 6CB69 Styles

The folding footrest assemblies shown in Figure 9-61 are secured to the seat back by hinges. To remove footrest assembly, remove hinge-to-seat back attaching screws from both sides of footrest and remove footrest assembly from seat back. To remove trimmed footrest board, remove hinge-to-board attaching screws and remove hinges from footrest board. To install, reverse removal procedure. When installing footrest hinge-to-seat back attaching screws, install machine thread screws in upper attaching hole at each hinge.

ADJUSTABLE FRONT SEAT BACK ASSEMBLY (Driver's Side Only) - Chevrolet "F, H and X" Body Style

Description

The optional adjustable front seat back (driver's side) can be adjusted to two positions by means of a control handle located at the right rear of the driver's seat cushion. With the control handle in the full rearward position, the seat back is adjusted to the full rearward position; when the control handle is actuated (rotated) forward, the seat back is adjusted forward to a normal or full forward position.

Removal and Installation - Handle, Cams, Cam Rod, Detent Plate and Spring

Refer to Figure 9-63 for "F and H" styles or Figure 9-64 for "X" styles.

The handle, outer cam, cam rod, detent plate, inner cam and spring are removed in the order stated.

1. At right side of seat, remove handle screws (see Figs. 9-62 and 9-63) and remove handle.
2. At left side of seat, remove nut securing outer cam to cam rod (see Fig. 9-63) and remove cam from rod.
3. To remove cam rod, pull rod out of seat cushion from right side of seat (see Fig. 9-63).

NOTE: It may be necessary to turn cam rod until keyed end of rod can be pulled through keyway in hole of seat frame. Where required, remove inner cam and spring from cam rod.
4. Remove screw securing inner detent plate and remove detent plate (see Figs. 9-62 and 9-63).
5. To install adjustable seat back cam rod, detent plate, cams, spring and handle, reverse removal procedure. Check adjustable seat back for proper operation. Tighten cam rod nut 18 to 24 inch-pounds.

SEAT BACK LOCK STRIKER AND SEAT BACK SIDE INNER BAR STOP - Bucket Seats

Description

Both the seat back lock striker located on the out-board side of the seat cushion and seat back side inner bar stop located on the inboard side of the seat

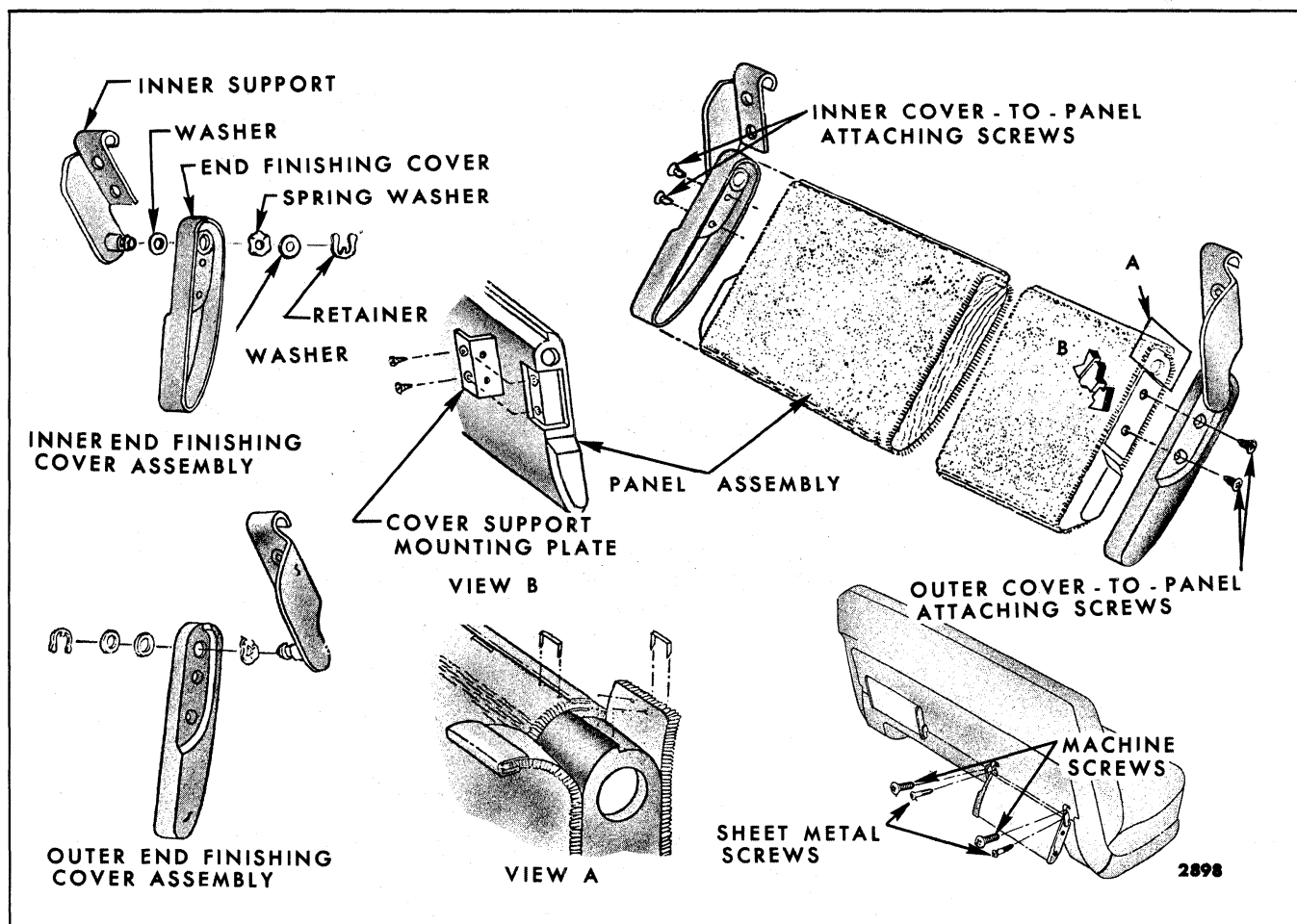
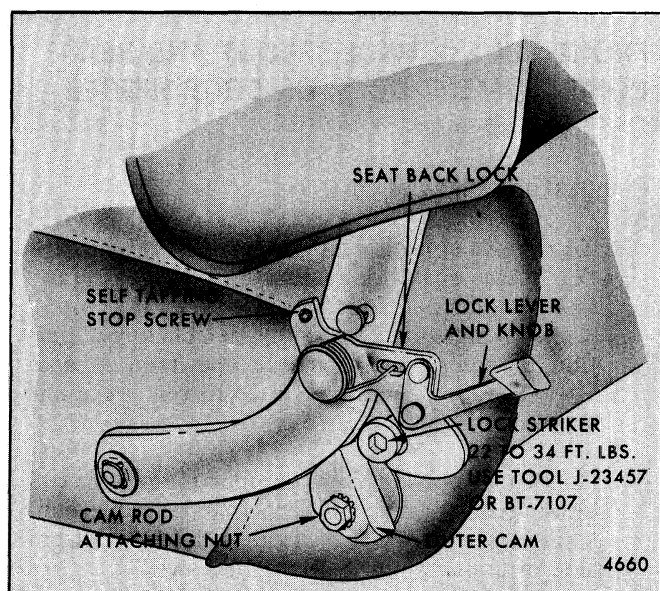


Fig. 9-61-Footrest Assembly - Cadillac 6CB69 Styles

Fig. 9-62-Adjustable Driver's Seat Back - Driver's Side Only
- Chevrolet "F and H" Styles

cushion consist of a single metal bolt and washer assembly threaded into a tapped plate located in the seat cushion frame assembly.

Removal and Installation

1. Using door and tail gate striker removal tool J-23457 or BT-7107 or equivalent, remove striker or stop from seat back side arm.
2. To install striker or stop, start thread engagement by hand to assure that bolt is threaded straight, then tighten striker or stop 22 to 34 foot-pounds Use tool J-23457 or BT-7107 or equivalent.

NOTE: On the Chevrolet "F and H" styles with driver's adjustable seat back, two threaded holes are provided in the driver's seat outboard anchor plate for installation of the seat back lock striker. The striker must be installed in the FRONT

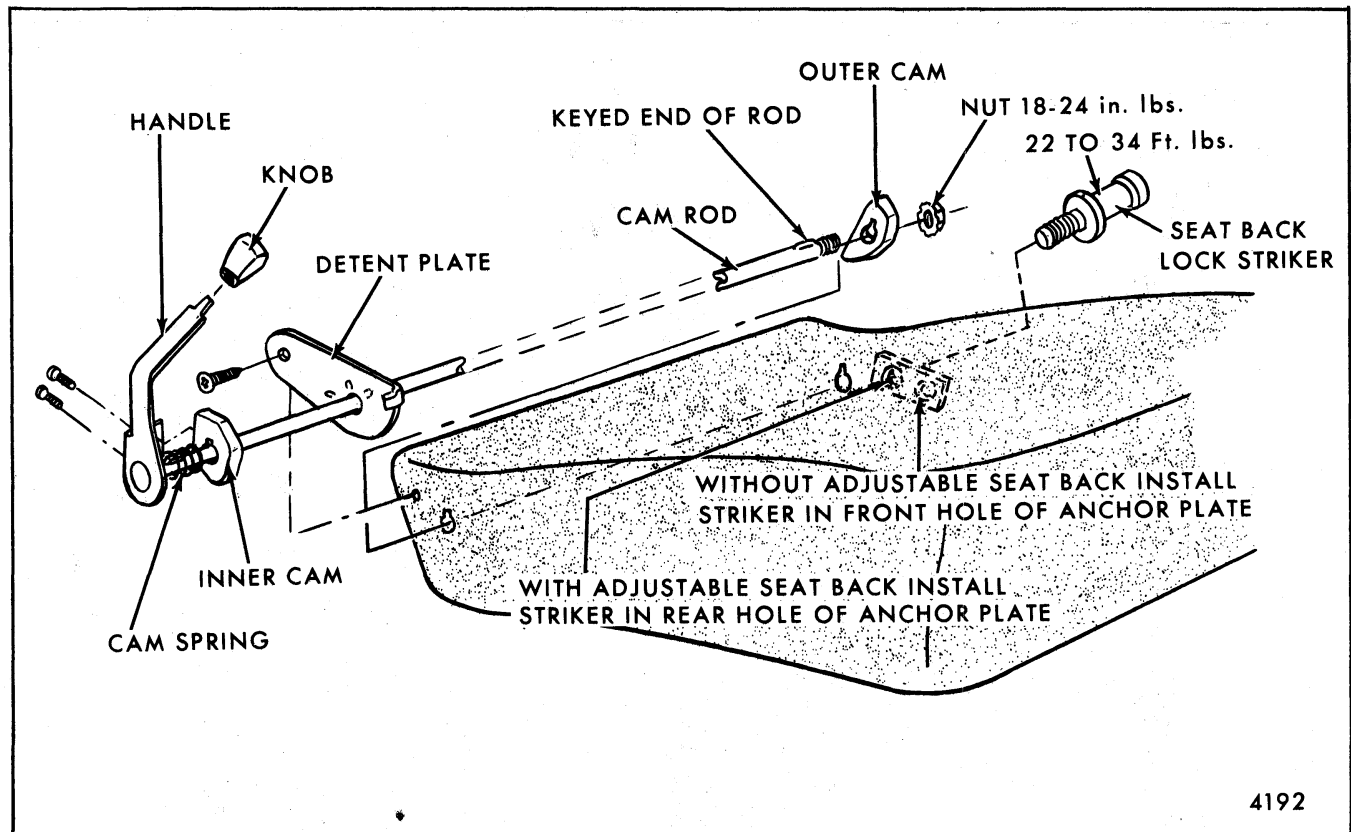


Fig. 9-63-Adjustable Driver's Seat Back Handle, Cams, Cam Rod, Detent Plate and Spring Removal and Installation from Seat Cushion - Chevrolet "F and H" Styles

threaded hole on a driver's seat **WITHOUT** adjustable seat back. On a driver's seat **WITH** adjustable seat back the striker must be installed in the **REAR** threaded hole.

CAUTION: The seat back lock striker and seat back side inner bar stop are important attaching parts in that they could affect the performance of vital components and systems. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

FRONT SEAT CONSOLE - Cadillac Talisman

The Cadillac Talisman (6CB69 option) front seat console is secured to the floor pan by two bolts on each side of the console (see Fig. 9-65). To remove console, operate both front seats to full forward position and remove rear attaching bolt; then operate both front seats to full rearward position and remove

front attaching bolts. Lift console upward sufficiently to disconnect compartment light wire connector; then remove console.

FRONT SEAT CONSOLE FRONT AND REAR COMPARTMENT DOOR OR DOOR HINGES - Cadillac Talisman

Removal and Installation

1. To remove console rear compartment door and/or hinge, open door and remove hinge screws from underside of console door (see Fig. 9-66). If removing hinge, carefully detach upper portion of compartment inside rear trim at area "A", Figure 9-66, sufficiently to remove hinge screws.
2. To remove console from compartment door (including hardware) and/or hinge, remove console as previously described and from bottom side of console remove hinge screws.
3. To remove lock cylinder or lock assembly, carefully detach and pull rearward upper portion of

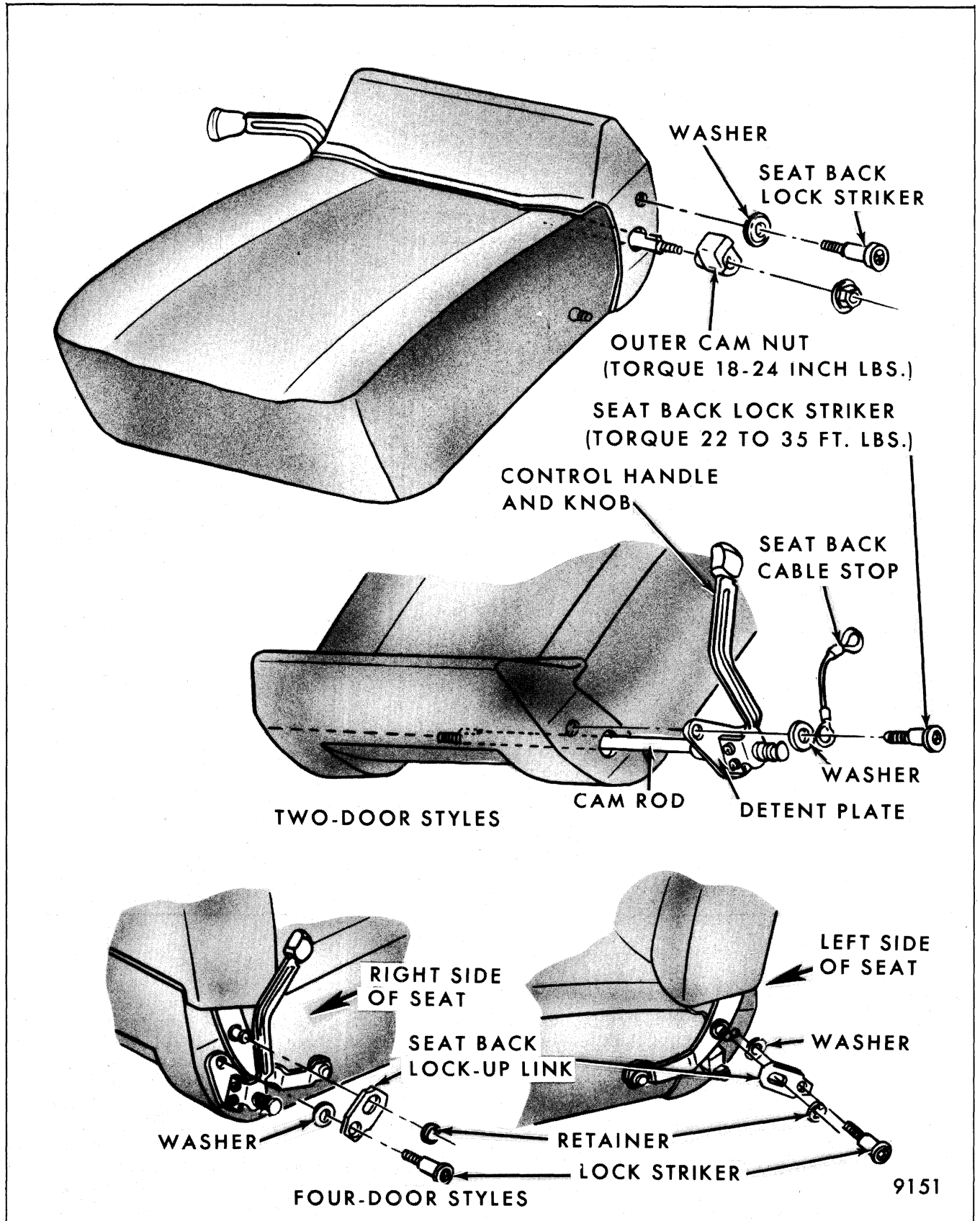


Fig. 9-64-Adjustable Front Seat Back Assembly (Driver's Side Only) - Chevrolet "X" Coupes and Sedans

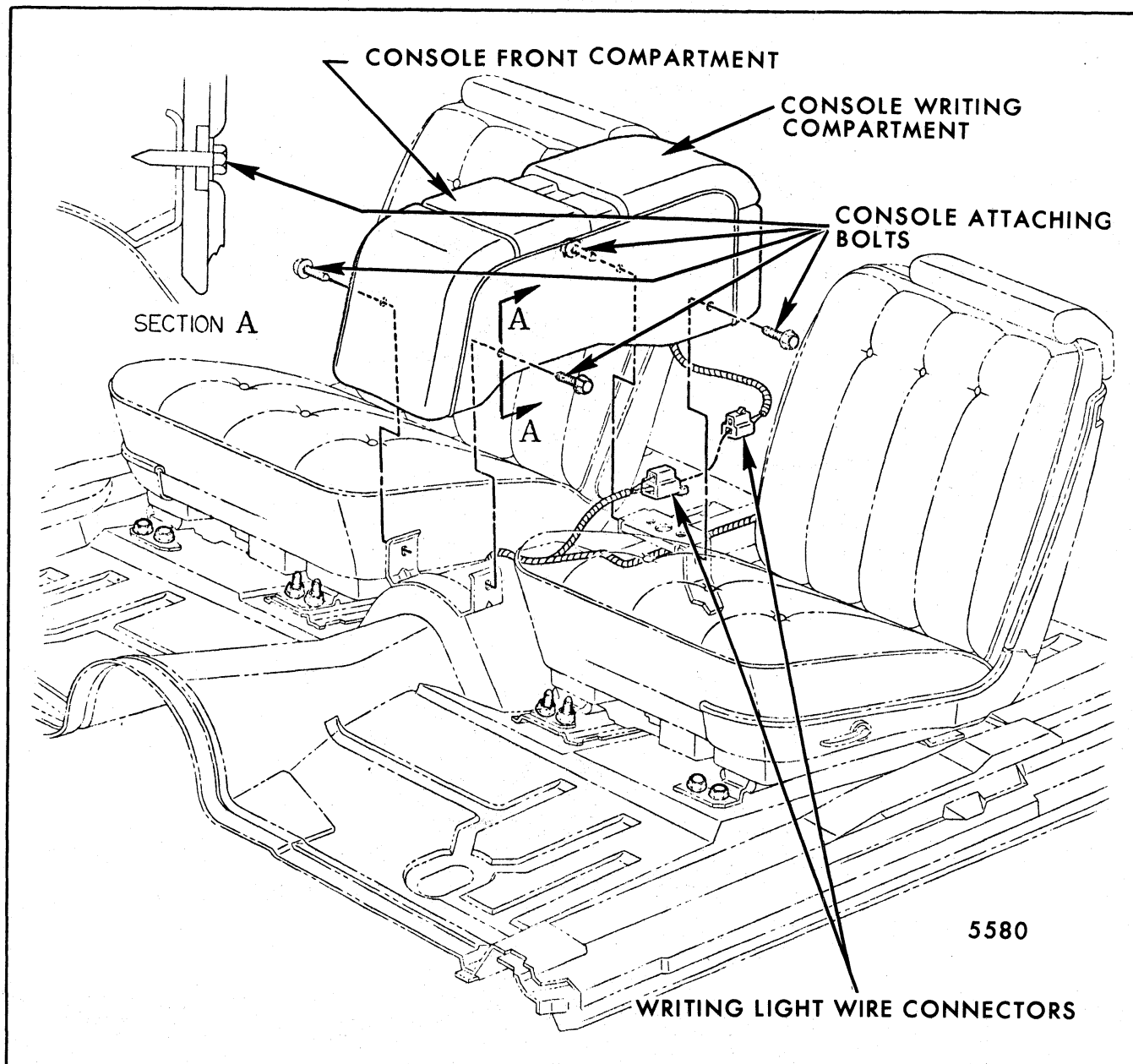


Fig. 9-65-Front Seat Console - Cadillac Talisman

compartment inside front trim at area "B", Figure 9-66, sufficiently to remove light lens and lock bolt screw. With light lens removed, remove lock bolt attaching screw, then remove lock bolt, spring washer and lock cylinder. To remove lock assembly remove two screws securing lock and carefully remove lock from console - **USE CARE** not to lose either of the sliding latch springs as bottom of lock is open and sliding latches and springs will fall out,

4. To install, reverse removal procedure. When installing lock assembly, hold sliding latches and

springs in lock until lock is positioned on retaining plate; then using a 5/16" x 2" long 1/4" drive socket, install two lock attaching screws through rear compartment light opening. To install lock cylinder, spring washer and lock bolt, turn console on side; then with key in lock cylinder, insert lock cylinder in lock, position spring washer and lock bolt on end of lock cylinder so that lock bolt is indexed on end of cylinder and install attaching screw and washer. Check operation of lock when in locked position, key must be removed from lock for lock to stay in locked position.

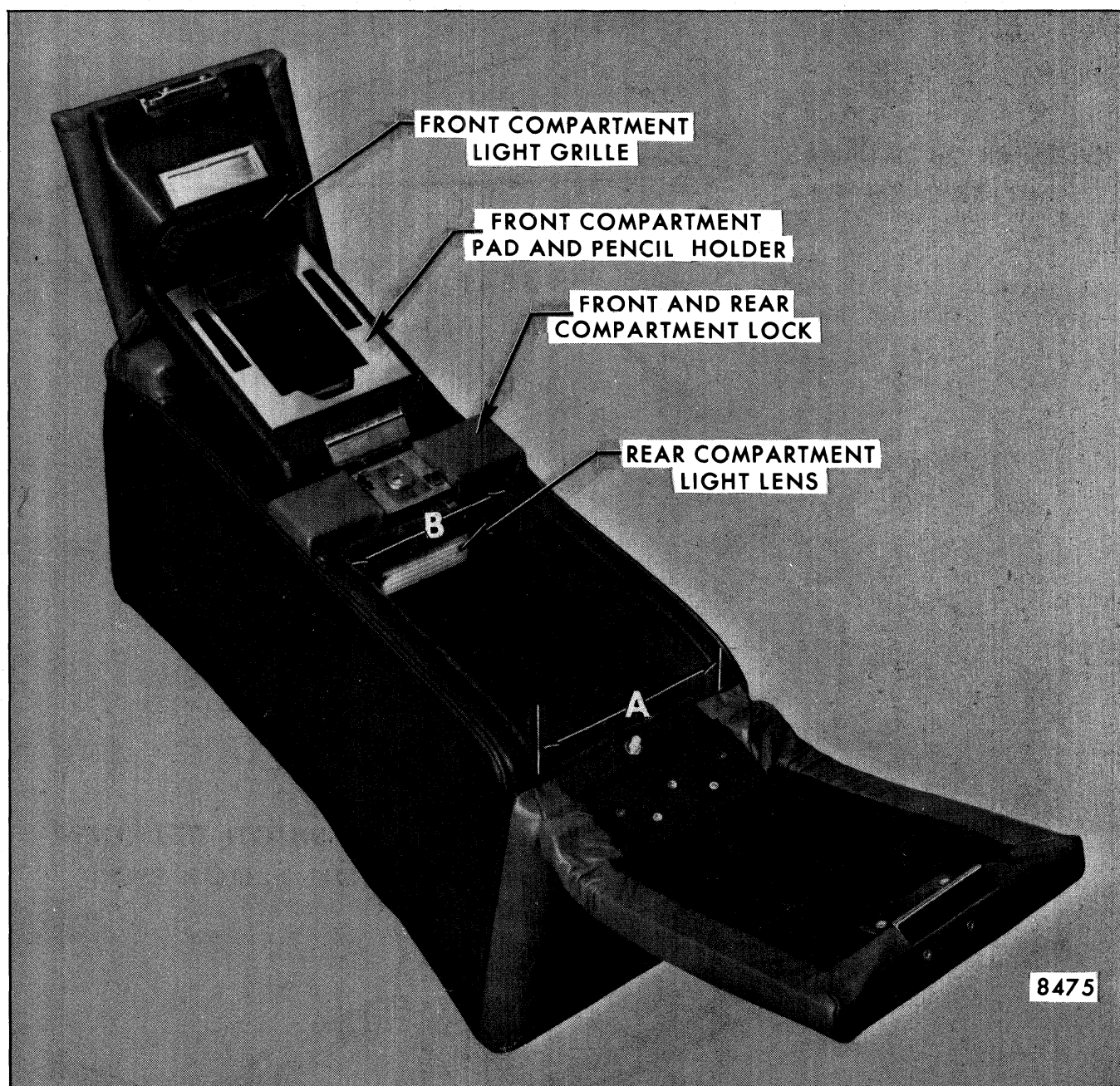


Fig. 9-66-Front Seat Console - Doors and Double Lock - Cadillac Talisman

REAR SEATS

REAR SEAT CUSHION ASSEMBLY - All Styles Except "A" Body and Station Wagons

Removal

Push lower forward edge of seat cushion rearward; then lift upward and pull forward on seat cushion frame to disengage cushion frame wires from retainers on rear seat pan (Figs. 9-68, 9-67 and 9-69).

NOTE: If difficulty is experienced in disengaging the front edge of the rear seat cushion from retainers on rear seat pan it may be necessary to kneel (on four-door styles) or stoop (on two-door styles) on the rear floor pan. Grasp lower edge of seat cushion at location of retainer on one side of seat; then lean forward (towards seat cushion) using leg pressure against hands or arms, exert sufficient rearward pressure to disengage seat from retainers.

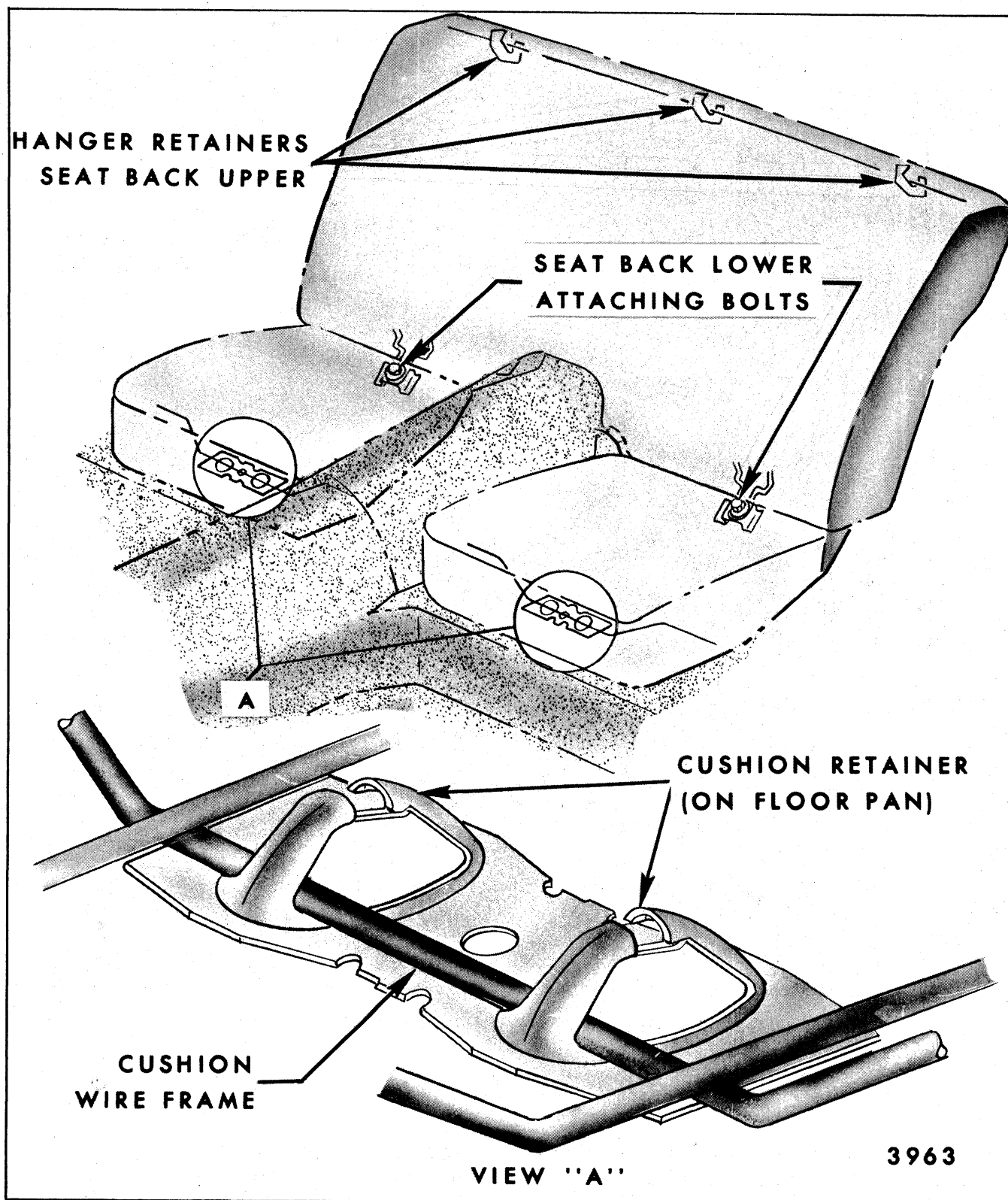


Fig. 9-67-Rear Seat Cushion and Back Installation - "F" Body Styles

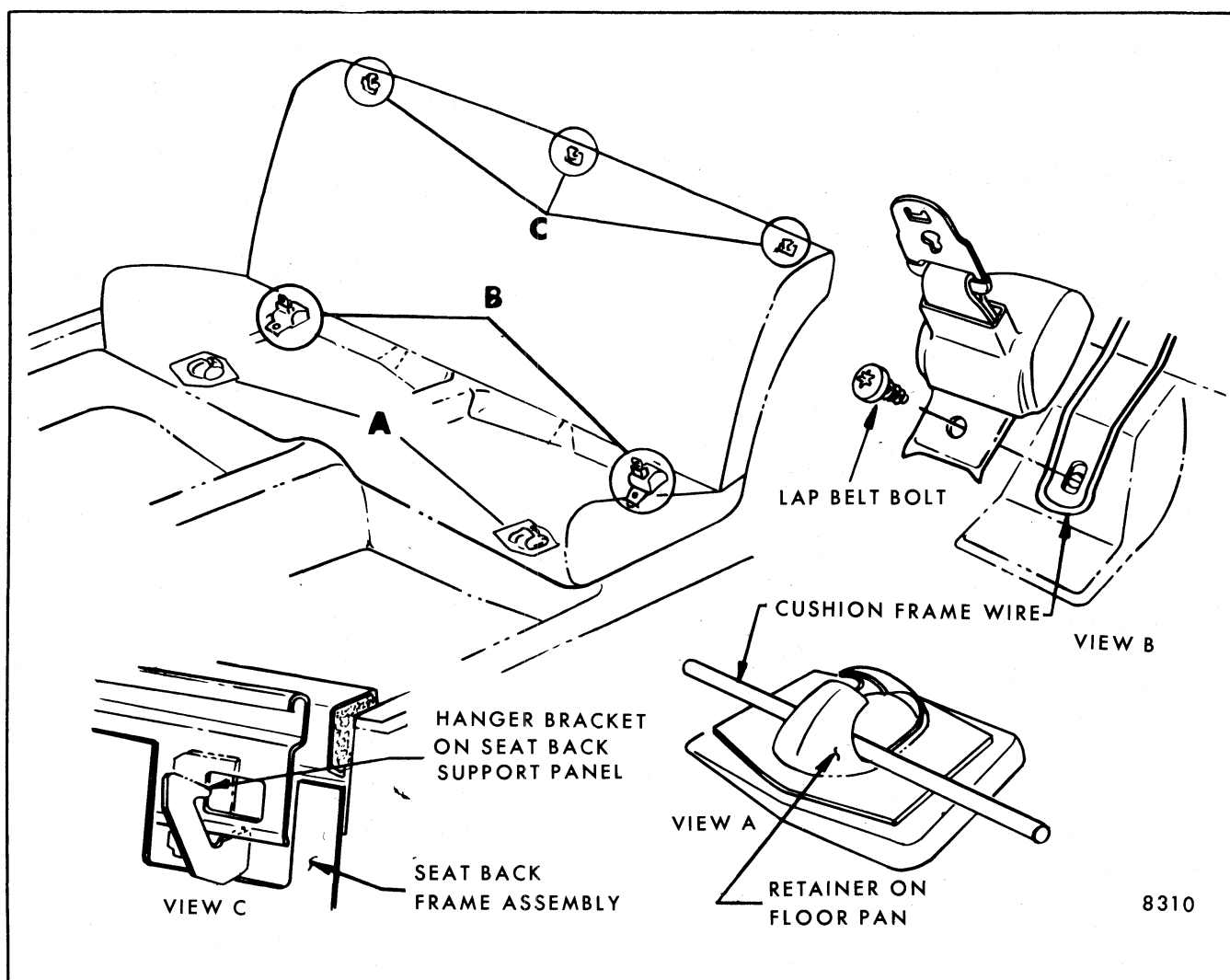


Fig. 9-68-Rear Seat Cushion and Back Installation - "B-C-D-E" Body Styles Except Station Wagon

Installation

1. Carefully lift cushion into body using caution not to damage adjacent trim. Position rear edge of cushion under rear seat back assembly.
2. Align wire protrusions on front of seat cushion frame with retainers on floor pan (Fig. 9-68). Push seat cushion assembly rearward until protrusions engage in retainers; then press down and pull cushion forward to fully engage in retainers.

NOTE: If difficulty is experienced in engaging front of cushion in retainers, use the same method described under "Removal" to engage cushion in retainers.

If seat cushion frame protrusions are not properly centered in relation to retainers on seat pan,

proper engagement and placement of cushion will be extremely difficult.

REAR SEAT CUSHION ASSEMBLY - All "A" Body Styles

Removal and Installation

1. Under front of rear seat cushion, remove two bolts securing rear cushion wire frame to floor pan (Fig. 9-70).
2. Pull rear seat cushion forward to disengage rear of cushion from under rear seat back.
3. To install rear seat cushion, reverse removal procedure.

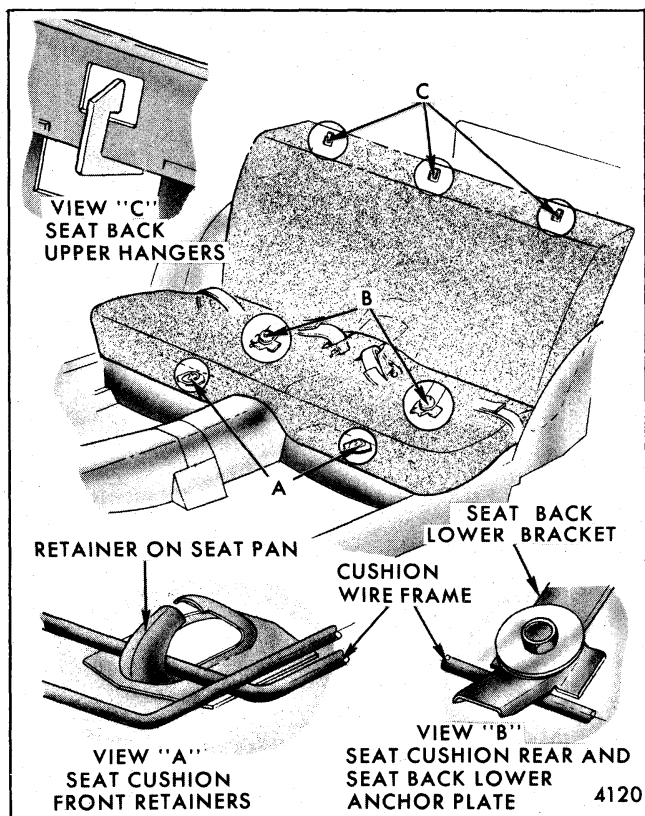


Fig. 9-69-Rear Seat Cushion and Seat Back - "H-11" Body Style

REAR SEAT BACK ASSEMBLY - "A and X" Body Styles Except Station Wagons and "X-17" Body Style

Removal and Installation

1. Remove rear seat cushion assembly as previously described.
2. At bottom of seat back, remove bolts securing rear seat outer lap belt retractors. On convertible styles, remove screw from rear side of seat back panel support securing upper corners of seat back to panel (see Figs. 9-68 and 9-70).

NOTE: If screws are used to secure center of rear side to seat back panel it will be necessary to work from inside rear compartment to remove screws.

3. On all styles except "E" styles, raise seat back upward until disengaged from hangers on the seat back panel support. On "E" styles push seat back downward until wire protrusions at top of seat back are disengaged from slots in seat back panel support.

4. Remove seat back assembly from body.
5. To install, reverse removal procedure, making certain that all attaching body tabs and hangers have industrial body tape applied to them to act as an anti-squeak. Install outer lap belt retractors over seat back lower brackets and tighten retractor bolts to 45 foot-pounds.

REAR SEAT BACK CENTER ARMREST AND CURTAIN

Removal and Installation

1. Lower rear seat back armrest. On all styles except 6CB69 carefully pull upper portion of armrest curtain out of slot in hanger plate and fold curtain forward. On 6CB69 styles, fold armrest flipper forward (see Fig. 9-71).
2. Remove four screws securing armrest to hanger plate linkage (see Fig. 9-71), then remove armrest from seat back.
3. To install, reverse removal procedure.

REAR SEAT BACK CENTER ARMREST HANGER PLATE AND LINKAGE

Removal and Installation

1. Remove rear seat back center armrest and curtain as previously described; then remove two screws securing armrest hanger plate to body seat back support brace. Remove rear seat back.
2. On back side of rear seat back, remove four screws securing armrest hanger plate to seat back supports; then carefully remove armrest and hanger plate assembly from seat back (Fig. 9-71).
3. To install, reverse removal procedure. Prior to tightening hanger plate screws move armrest assembly upward until top is snug against top of opening in seat back.

AUXILIARY SEAT ASSEMBLY - Cadillac Limousine Styles

Removal and Installation

1. Place auxiliary seat in the folded forward position.

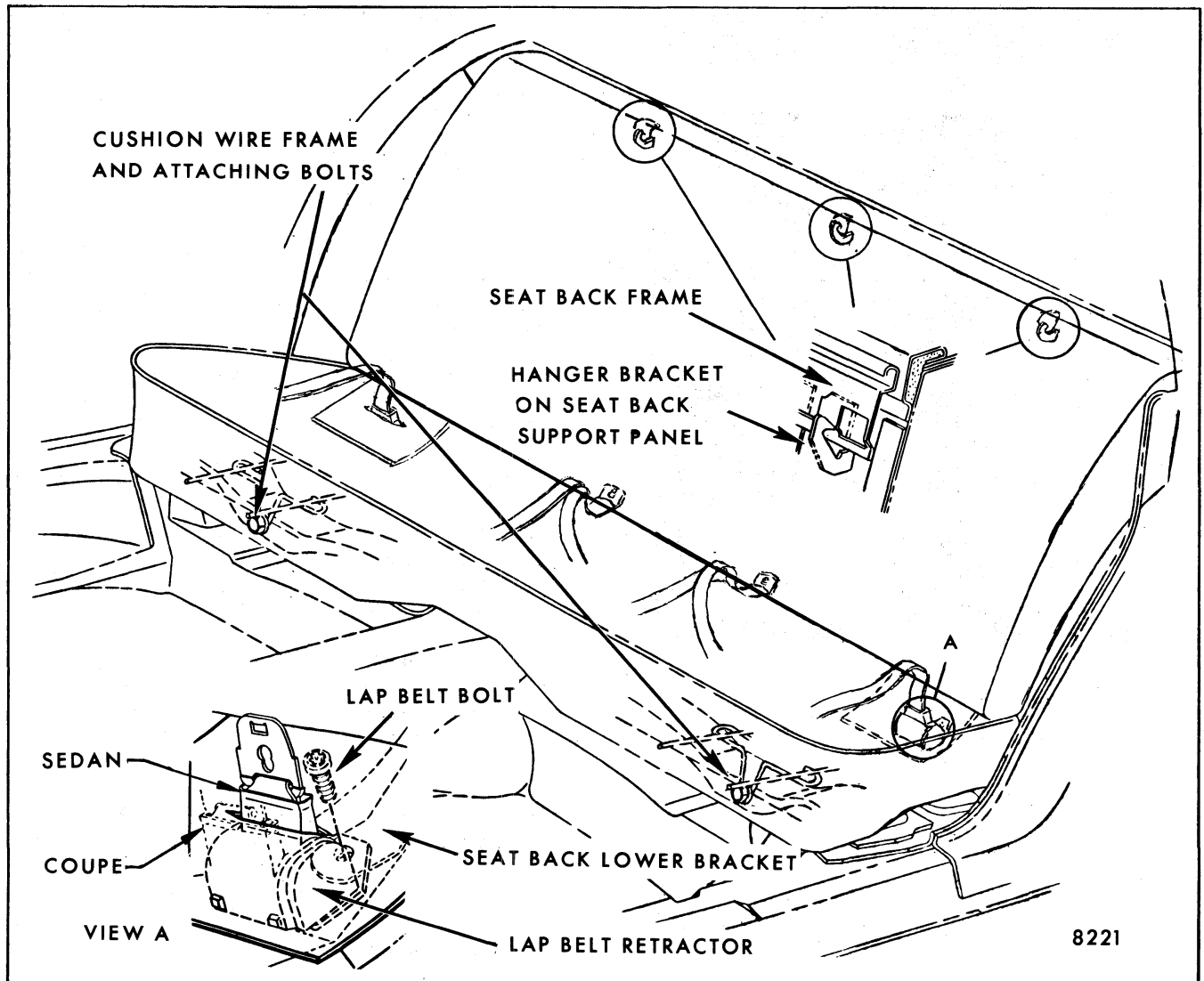


Fig. 9-70-Rear Seat Cushion and Back Installation - All "A" Body Except Station Wagons

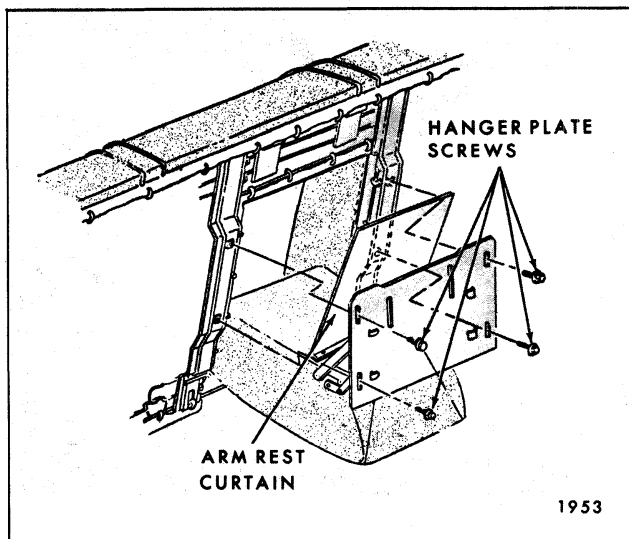


Fig. 9-71-Rear Seat Back Armrest and Hanger Plate

2. Move rear seat footrest rearward; then unsnap carpet flap. Move footrest forward and carefully pull carpet flap from under footrest as shown in Figure 9-72.
3. Remove footrest hinge attaching screws and remove footrest assembly (Fig. 9-72).
4. Remove auxiliary seat hinge pin cap screws; then remove cap and auxiliary seat assembly (Fig. 9-72).
5. To install auxiliary seat assembly, reverse removal procedure.

AUXILIARY SEAT ADJUSTMENT - Cadillac Limousine Styles

The auxiliary seats in Cadillac limousine styles can

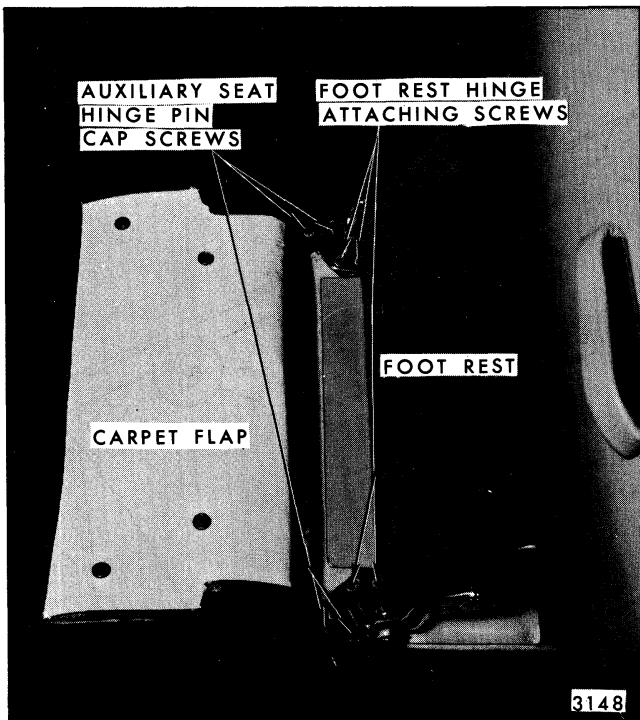


Fig. 9-72-Auxiliary Seat Assembly - Removal and Installation
Cadillac Limousine Styles

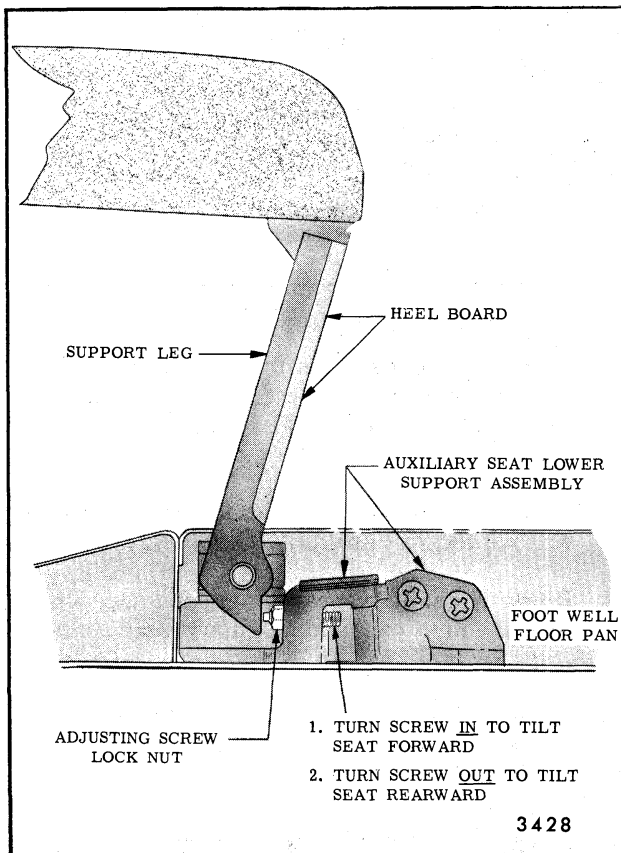


Fig. 9-73-Auxiliary Seat Adjustment - Cadillac Limousine
Styles

be adjusted to provide additional leg room for auxiliary seat passengers.

The following procedure describes and illustrates how to adjust the auxiliary seat.

1. Place auxiliary seat in the upright sitting position.
2. On the front side of the auxiliary seat heel board, turn back foot well carpet flap to expose the auxiliary seat lower outboard and inboard support assemblies (Fig. 9-73).
3. Loosen the hex head adjusting screw lock nut at both inboard and outboard support (see Fig. 9-73).
4. Carefully turn the adjusting screw (see Fig. 9-73) at both supports the SAME AMOUNT to allow the seat to pivot rearward further, thereby, providing additional leg room for the auxiliary seat passenger. Tighten the adjusting screw lock nut at both supports.

When making this adjustment maintain a minimum distance of at least 6-1/4 inches from rear seat cushion to auxiliary seat.

AUXILIARY SEAT LOWER SUPPORT ASSEMBLY - Cadillac Limousine Styles

Removal and Installation

1. Remove auxiliary seat assembly as previously described.
2. Remove lower support assembly attaching

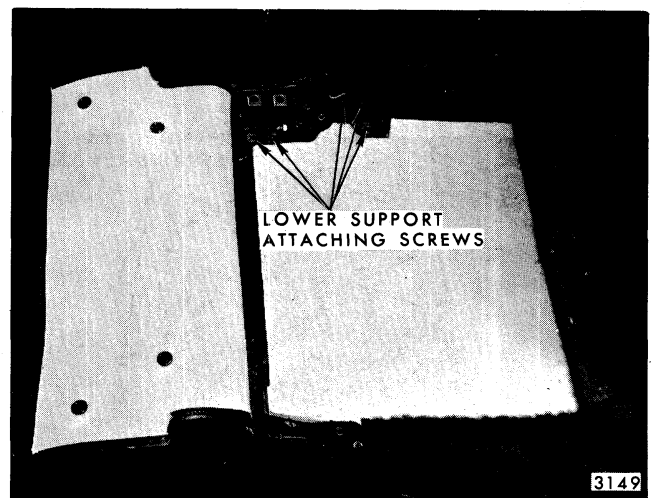
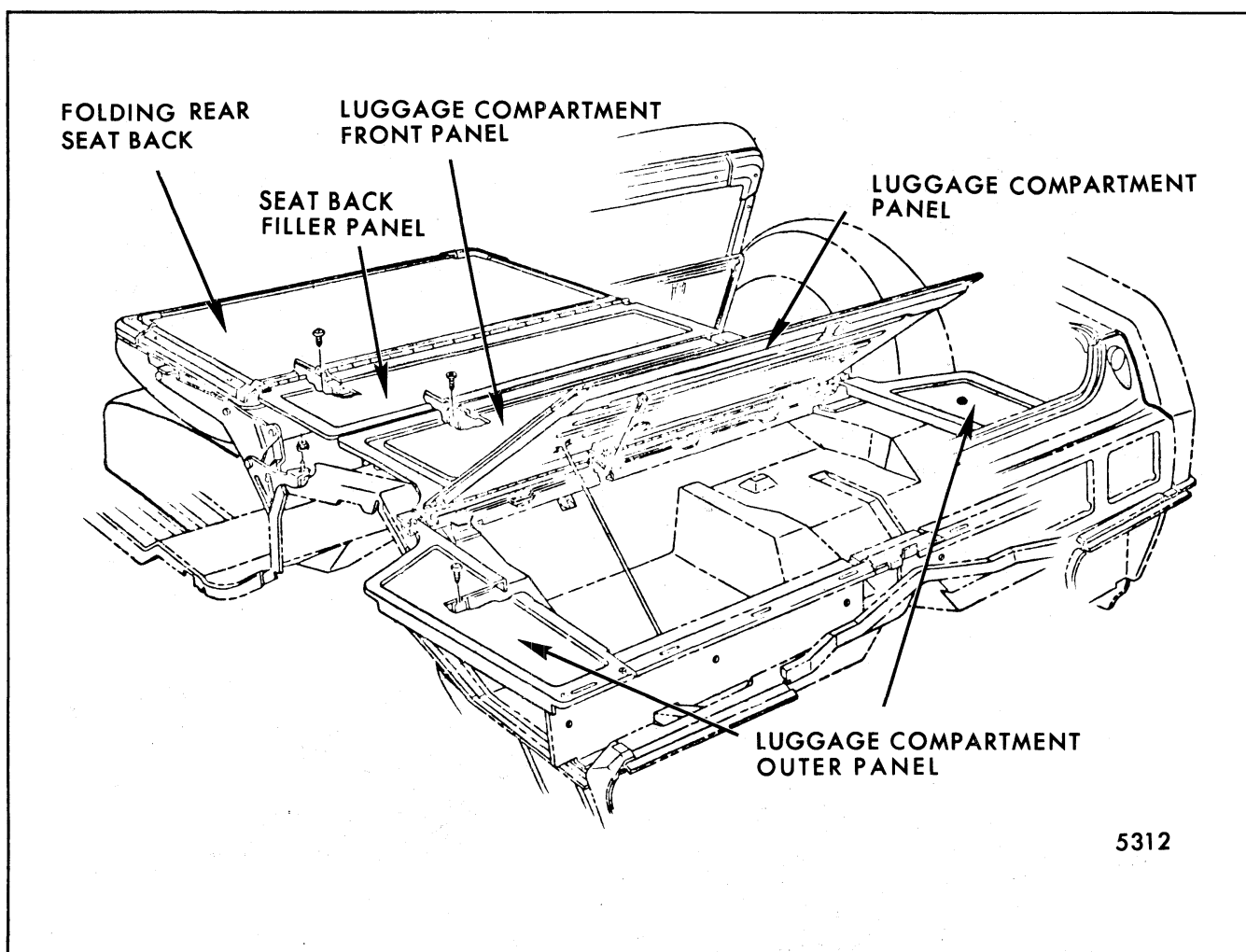


Fig. 9-74-Auxiliary Seat Lower Support - Cadillac Limousine
Styles



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Fig. 9-75-Folding Rear Seat and Load Floor Panels - "X-17" Style Shown ("H-07, 15 and 77" Styles Typical)

screws shown in Figure 9-74 and remove support assembly.

3. To install auxiliary seat lower support assembly, reverse removal procedure.

of the rear seat back panel, rear seat back filler panel, luggage compartment front panel, luggage compartment panel and a right and left side luggage compartment outer panel (Fig. 9-75).

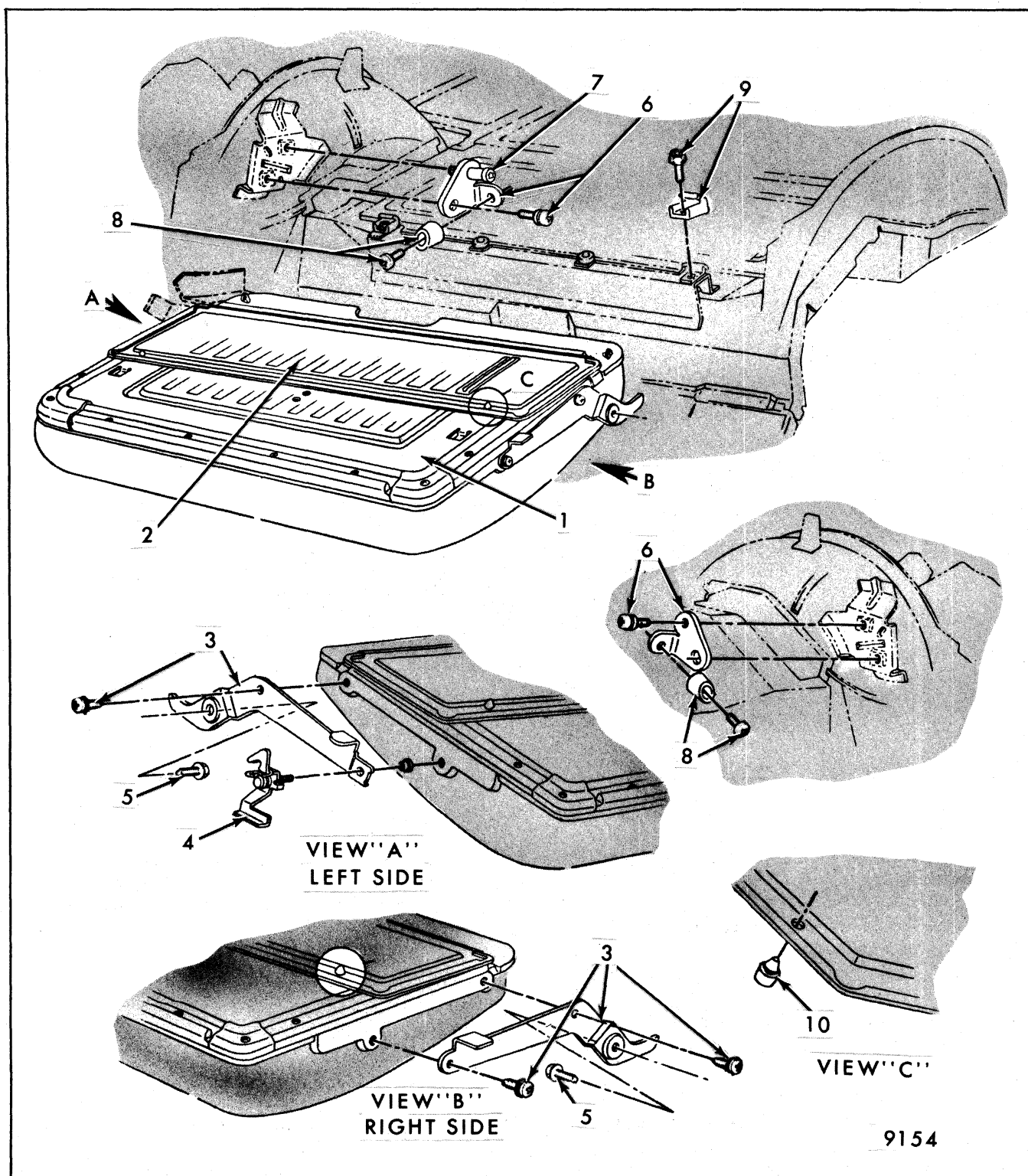
FOLDING REAR SEAT AND LOAD FLOOR PANELS - "H-07, 15 and 77" Styles and "X-17" Styles

The "H-07, 15 and 77" styles and "X-17" styles are equipped with a folding rear seat back and filler panel which can be lowered to provide a flat load floor area. The rear seat back has a positive acting seat back lock located on the right side. The lock must be disengaged to lower the seat back. When the rear seat back is raised to the up position the lock hook engages the striker and locks the seat back securely in place. The luggage compartment cover has a hold-open support rod secured by a clip on the luggage compartment rear cross bar. The load floor consists

REAR SEAT CUSHION

Removal and Installation

1. To remove rear seat cushion push front of seat rearward and lift upward to disengage cushion frame wire from retainer on floor pan; then pull toward front of body until cushion frame rear wires disengage from under rear retainers on floor pan. Disengage seat belts from seat belt retainers and lift cushion from body.
2. To install, reverse removal procedure making sure seat frame wire is securely engaged in both front and rear floor pan retainers.



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Fig. 9-76-Folding Rear Seat Back and Lock Installation Assembly - "X-17" Styles

- | | | | |
|--|--|---|--|
| 1. Seat Back Panel | 5. Seat Back Pivot Bolt | 7. Seat Back Lock Striker | 9. Seat Back Filler Panel Hold Down Retainer and Attaching Screw |
| 2. Seat Back Filler Panel | 6. Seat Back Lock Striker and Bumper Support | 8. Seat Back Bumper and Attaching Screw at Lock Striker | 10. Seat Back Filler Panel Bumper and Attaching Screw |
| 3. Seat Back Pivot Arm and Attaching Bolts | | | |
| 4. Seat Back Lock | | | |

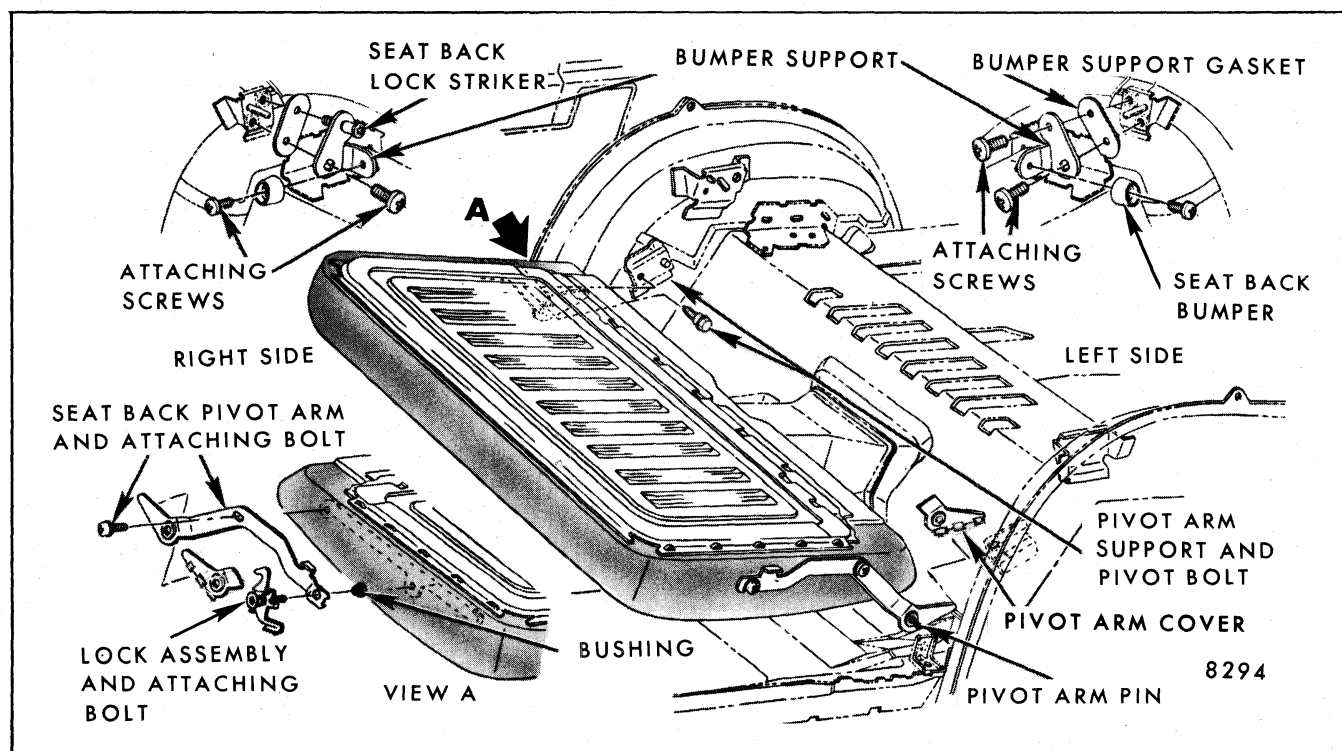


Fig. 9-77-Folding Rear Seat Back Assembly - "H-07, 15 and 77" Styles

LUGGAGE COMPARTMENT PANEL AND HINGE ASSEMBLY - "X-17" Style

Removal and Installation

1. Lift luggage compartment panel sufficiently to gain access to hinge attaching screws at front of panel (Fig. 9-75).
2. Remove attaching screws and lift panel and hinge assembly from body.
3. To install, reverse removal procedure.

REAR SEAT BACK FILLER PANEL AND HINGE ASSEMBLY

Removal and Installation

1. With rear seat back and filler panel in load floor position, remove screws securing filler panel hinge to seat back panel and remove filler panel from body.
2. To install, reverse removal procedure.

REAR SEAT BACK ASSEMBLY (Includes Pivot Arms, Back Panel, Filler Panel and Seat Back Lock) - "X and H" Styles with Folding Rear Seat

Removal and Installation

1. With rear seat back in load floor position and with filler panel against back, remove pivot bolt (see Figs. 9-76 and 9-77) securing right side pivot arm to pivot arm support. Lift right side of seat back assembly sufficiently to disengage left side pivot arm pin from pivot support; then remove seat back assembly from body.
2. To remove seat back pivot arm(s), remove lock and pivot arm attaching bolt on right side and/or pivot arm attaching bolts on left side (see Figs. 9-76 and 9-77), then remove pivot arm(s).
3. To remove seat back trim and foam pad from seat back panel, remove both right and left pivot arms as described in step 2 and remove seat back filler panel.
4. Remove hog rings securing trim cover to seat back panel and remove trim cover. To remove foam pad or if replacing back panel, carefully break cement bond securing pad to panel and remove pad.

5. To install, reverse removal procedure. Torque linkage to seat back frame attaching bolts to 8 to 12 foot-pounds. If replacing foam pad, cement pad in position with foam rubber cement.

LUGGAGE COMPARTMENT FRONT FILLER PANEL - "X-17" Style

Removal and Installation

1. With rear seat in load floor position turn filler panel back onto seat back panel.
2. Remove luggage compartment panel and hinge assembly as previously described.
3. Remove luggage compartment front panel, front attaching screws and seat back filler panel stops.

4. Remove luggage compartment right and left outer panel front attaching screw (see Fig. 9-75); then remove luggage compartment front panel.

5. To install, reverse removal procedure.

REAR SEAT BACK LOCK ASSEMBLY

Removal and Installation

1. Lower rear seat back to load floor position.
2. Remove lock assembly (includes attaching bolt, lock spring, latch, handle and bushing) (Figs. 9-76 and 9-77).
3. To install lock assembly, reverse removal procedure. Tighten lock attaching bolt to 8 to 12 foot-pounds and check for proper operation of lock.

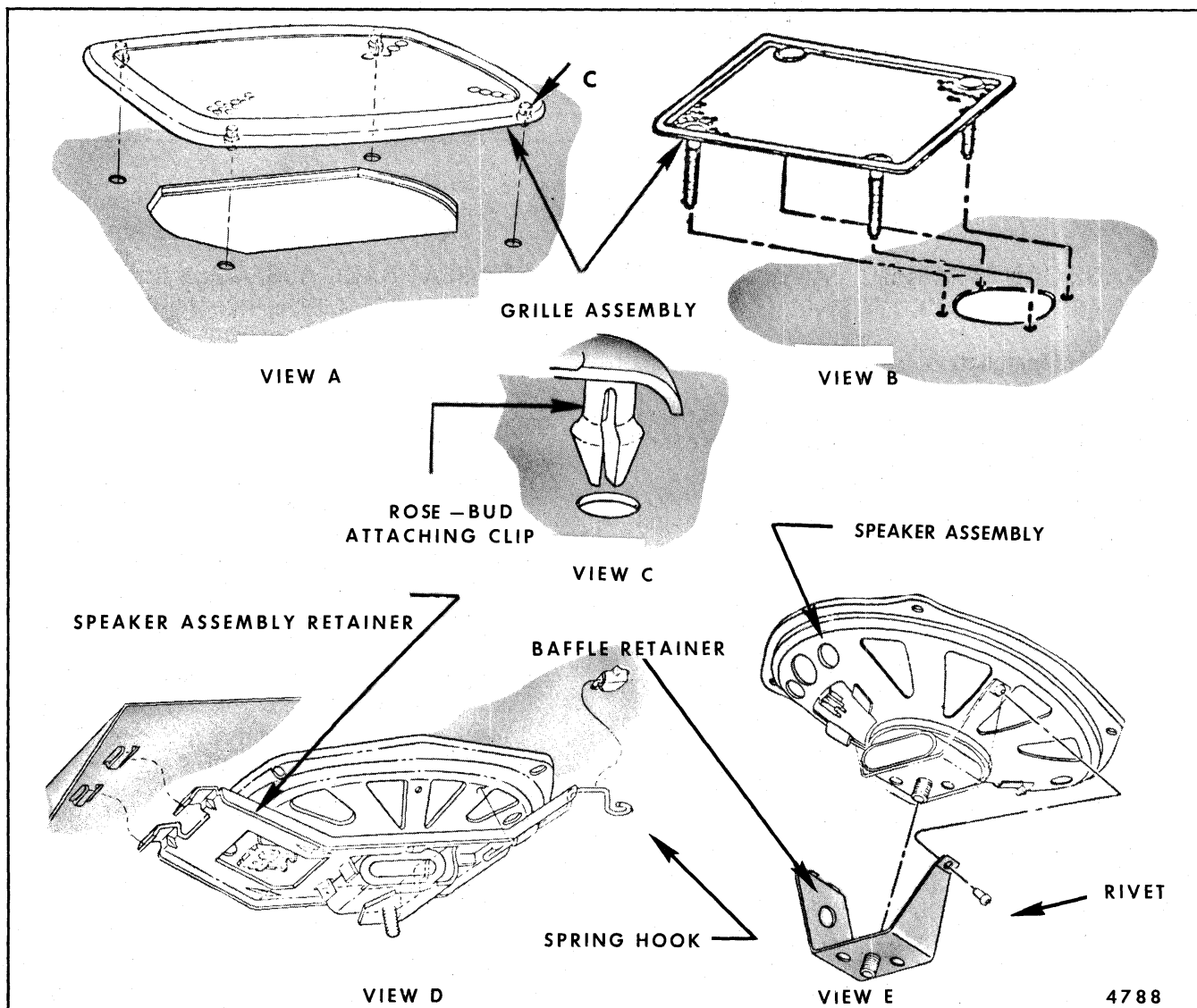


Fig. 9-78-Grille and Speaker Attachment

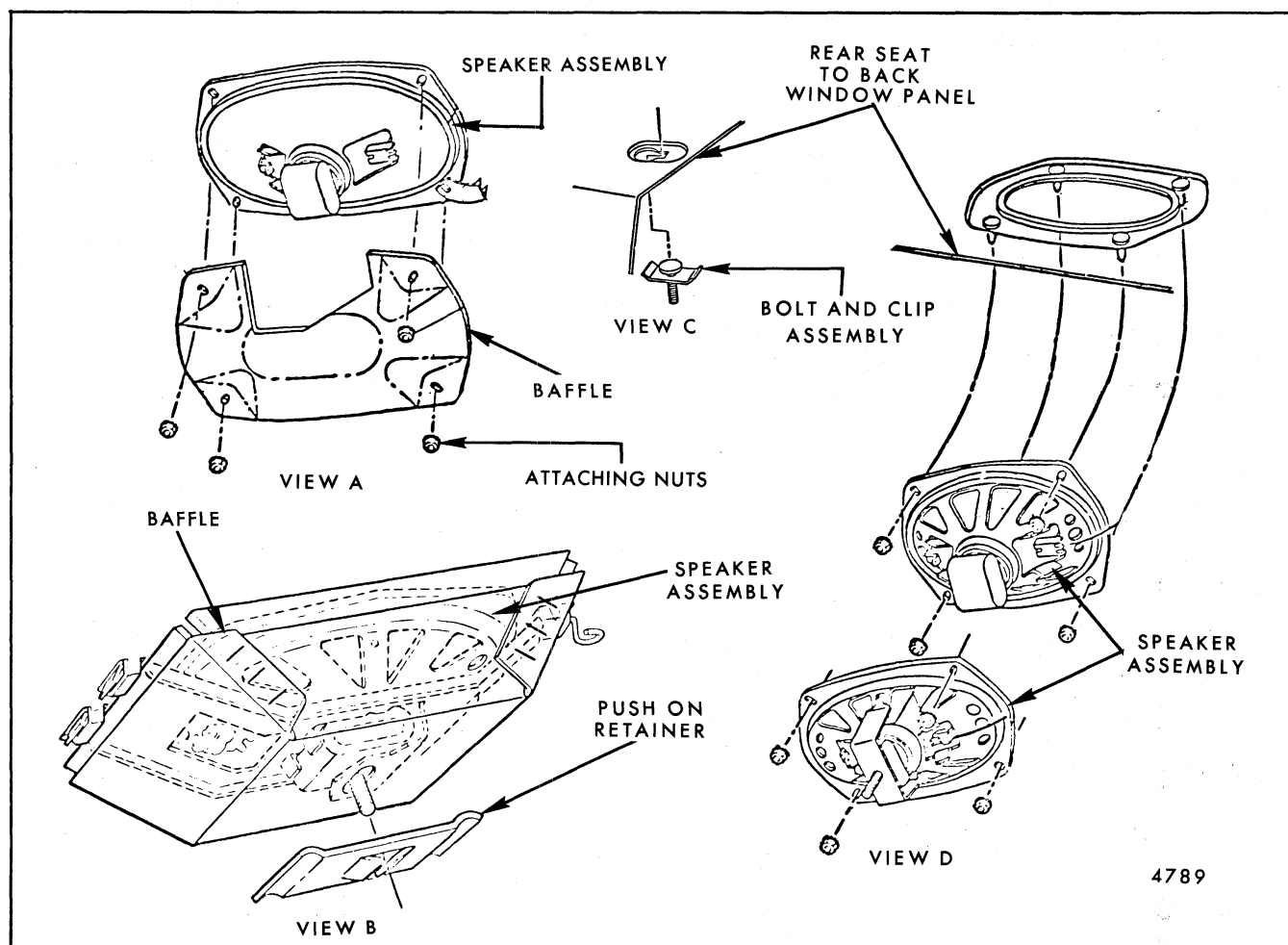


Fig. 9-79-Baffle and Speaker Attachment

REAR SEAT BACK LOCK STRIKER, BUMPERS AND SUPPORTS

Removal and Installation

1. Using lock striker removal tool J-23457 or BT-7107 or equivalent, remove striker (Fig. 9-77).
2. To remove seat back bumpers, bumper gasket or bumper support, remove bumper screws or support screws shown in Figure 9-77.
3. To install, reverse removal procedure. Torque lock striker 22 to 34 foot-pounds.

REAR SPEAKERS - ALL STYLES (Except "35,45,67", "X-17" and "H- 07,77" Styles)

Description

One basic type of speaker assembly is installed to the

rear seat to back window panel. Access for removal is gained through the rear compartment.

If a non-perforated painted panel is used, the speaker is attached to a speaker grille assembly or retained by a one piece metal retainer (see Fig. 9-78, Views "B" and "D", and Fig. 9-80).

If a perforated vinyl coated panel is used the speaker is retained with either a metal retainer Figure 9-78, View "D" or a bolt and clip assembly Figure 9-79, View "C".

Removal and Installation

1. If speaker baffle (cover) is installed to speaker assembly, detach baffle by removing push-on retainer or attaching nuts (see Fig. 9-79, View "A" and "B").
2. Disconnect speaker wire from body harness.

NOTE: If replacing speaker remove baffle retainer as shown in Figure 9-78, View "D" and "E".

3. If not previously removed with baffle, remove four attaching nuts to separate speaker assembly from grille and lift grille assembly upward to complete removal (see Fig. 9-79).
4. On styles using metal retainer assembly to secure speaker to rear seat to back window panel Figure 9-78, View "D", disengage spring hook from tab at rear of panel and swing speaker assembly downward to remove.
5. To install, reverse removal procedure.

REAR SPEAKER - "67" Styles

Description

The rear speaker on "67" styles is installed to the rear of the rear seat back brace (see Fig. 9-81).

Removal and Installation

1. Remove rear seat cushion and seat back.
2. Disconnect speaker wire from body harness at rear of speaker assembly.
3. Remove four attaching nuts to detach speaker assembly from grille studs.
4. To remove grille assembly pull outward to separate from seat back brace and folding top compartment bag material.
5. To install, reverse removal procedure.

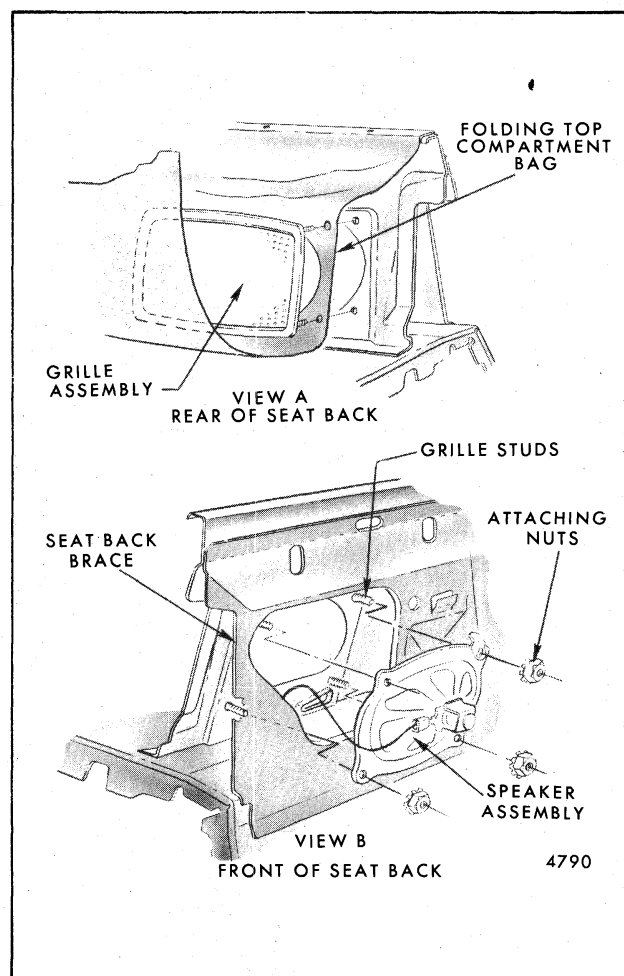


Fig. 9-81-Rear Seat Speaker Installation - "67" Styles

BACK WINDOW LOWER GARNISH MOLDING

Description

The back window lower garnish molding is installed over the rear seat to back window panel. Removal is accomplished by removing attaching screws on all units except "B-57" styles.

Removal and Installation

1. On "B-57" styles access to attaching clips is gained through the rear compartment. To remove molding and clips, depress tab of clip and push to inside of unit (Fig. 9-82).
2. To install, align clips to piercings and press molding firmly in place.

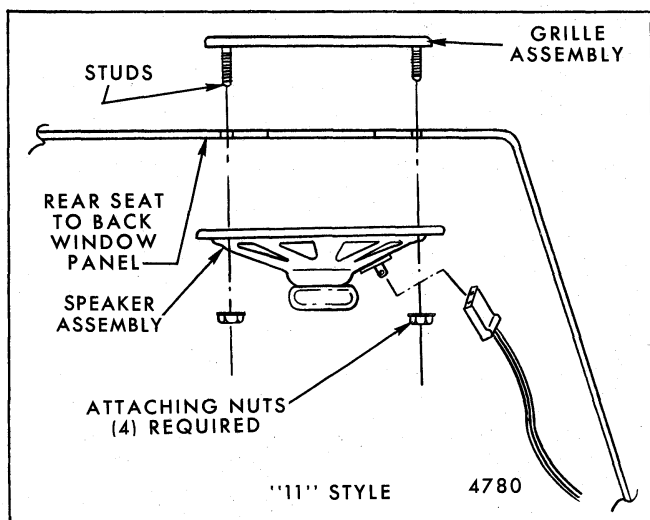


Fig. 9-80-Rear Speaker - "11" Styles

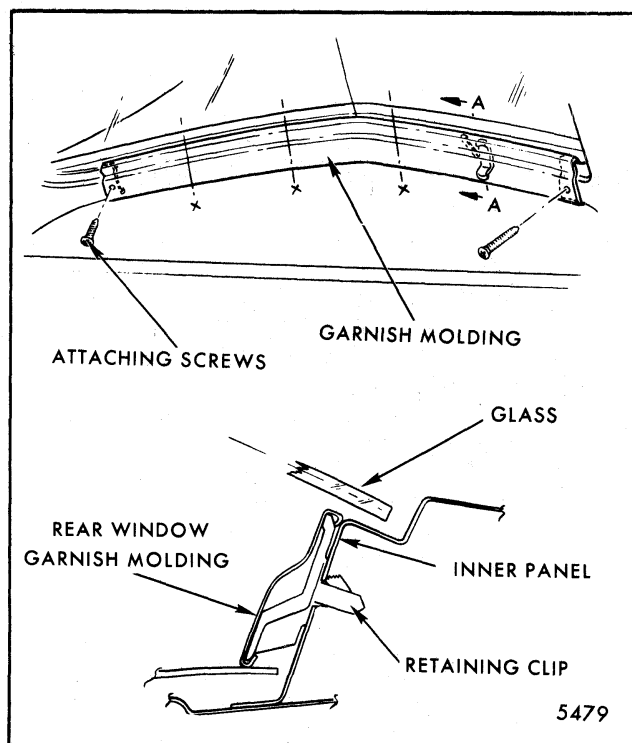


Fig. 9-82-Back Window Lower Garnish Molding - "B-57" Styles

REAR SEAT TO BACK WINDOW PANEL TRIM ASSEMBLY - All Styles

Removal and Installation

Refer to appropriate illustration - Figure 9-83, 9-84 or 9- 85.

1. Remove rear seat cushion and back assemblies.
2. Detach optional equipment grilles where present.
3. Remove rear quarter lower and upper trim assemblies.
4. On "H" styles remove both right and left rear quarter window finishing moldings.
5. Carefully bend out tabs shown in View "B", Figure 9-83, and pull front of trim panel forward sufficiently to clear seat back hanger brackets (see View "A", Fig. 9-83); then lift trim panel upward and forward to disengage rear edge of foundation from under back window flange (see Section "C-C", Fig. 9-83) and remove trim panel.
6. On "A-57" and "X-27,69" styles remove two trim panel to seat back brace attaching screws

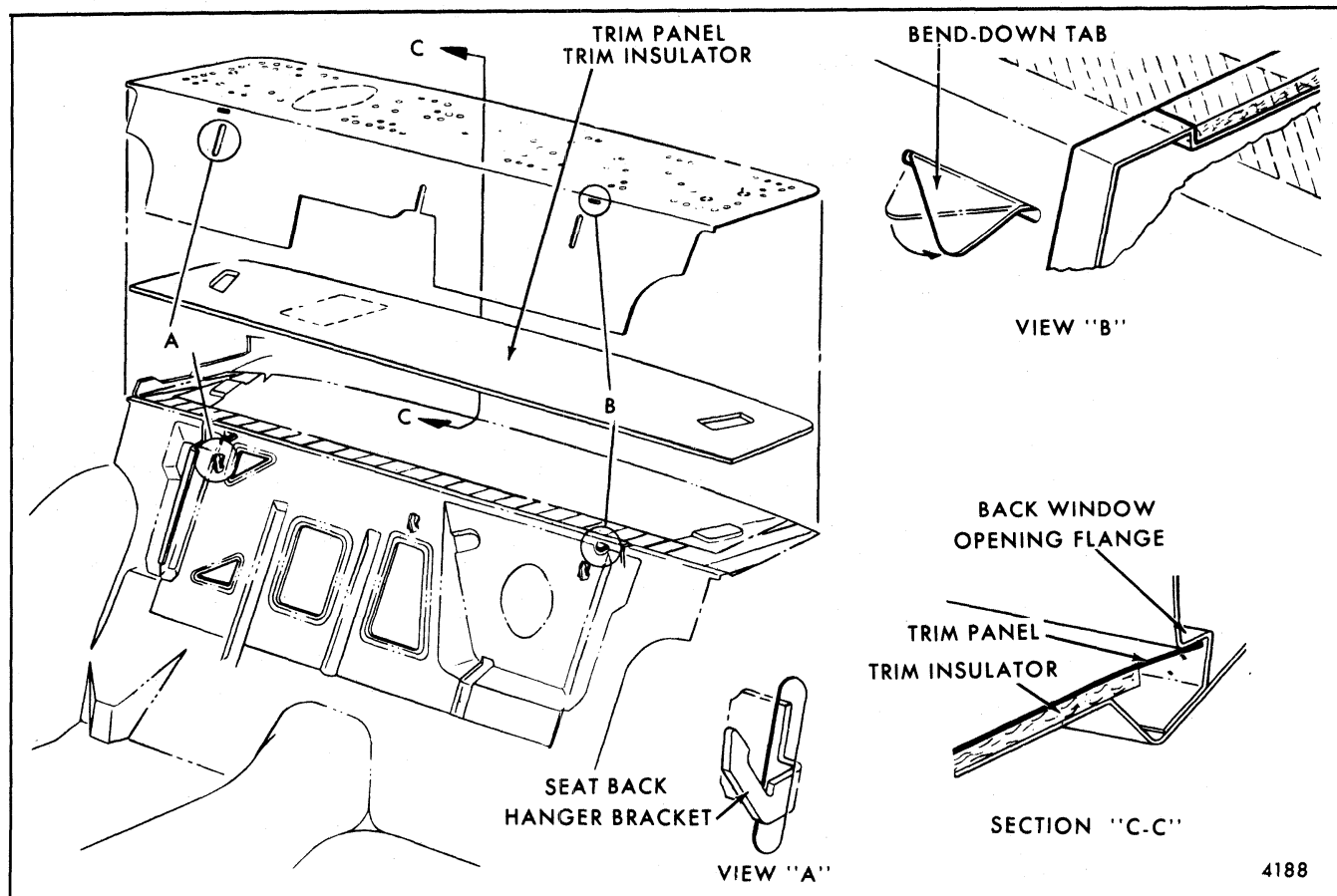


Fig. 9-83-Rear Seat-to-Back Window Trim Panel and Insulator - Typical "H-11" Styles

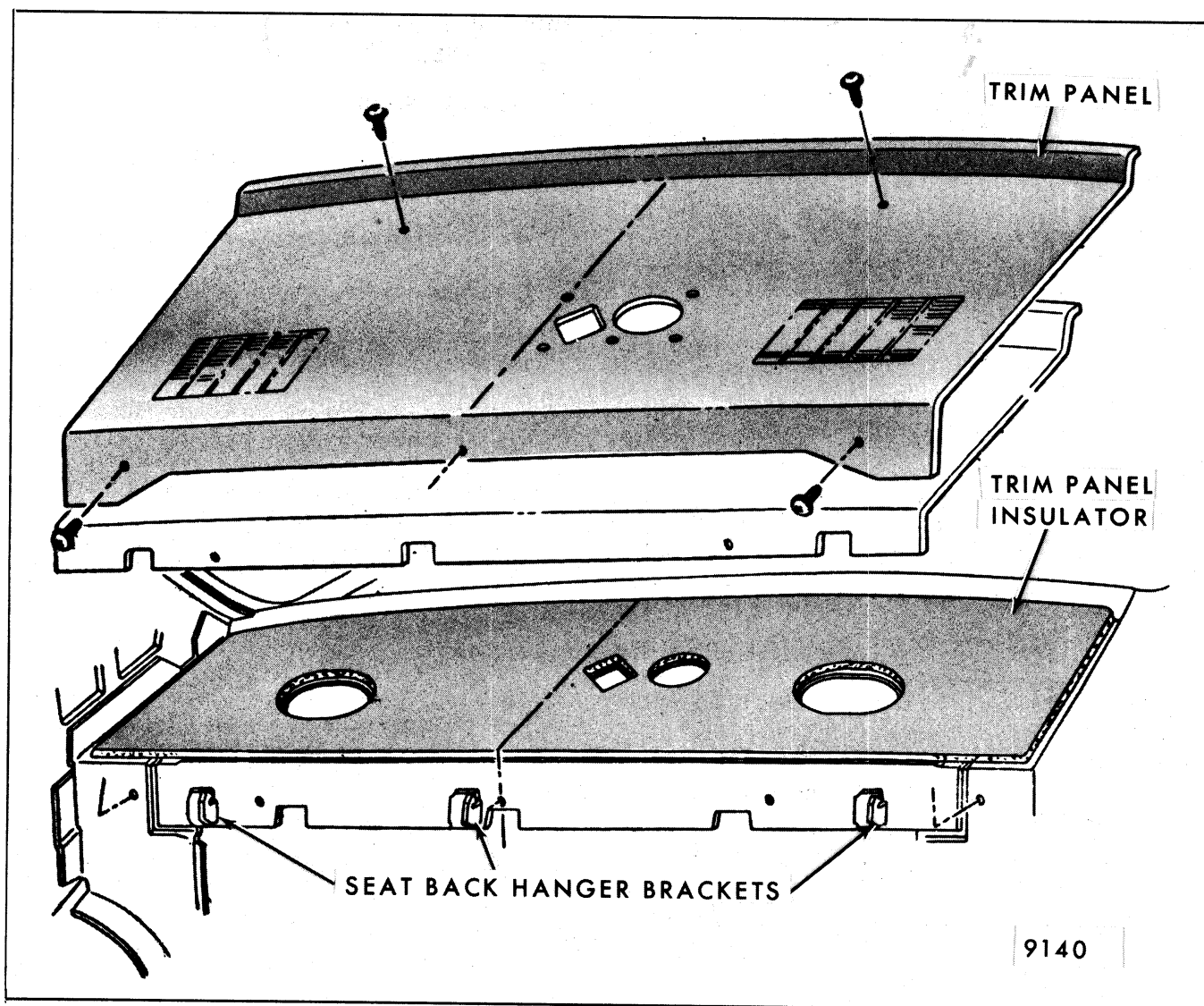


Fig. 9-84-Back Window Trim Panel and Insulator Attachment - Typical "H-27", "X-27, 69" Styles

and disengage tabs at rear of trim panel from slots.

7. Carefully break cement bond securing trim assembly at seat back panel (Fig. 9-85).
8. Remove trim assembly lifting up front edge and by pulling assembly forward.
9. To install, position trim assembly to back window

panel by inserting rear edge of assembly under garnish molding or feature strip. Center and align front edge of trim assembly with front edge of seat back panel as shown in Figure 9-85. With non-staining vinyl trim adhesive, cement valance of trim assembly to seat back panel as shown. Install attaching screws if present, then reverse balance of removal procedure.

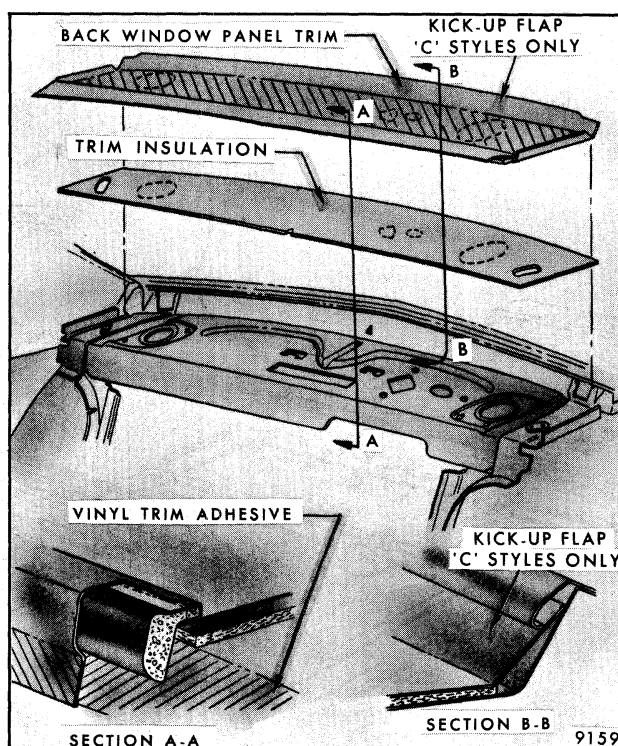


Fig. 9-85-Back Window Trim Panel and Insulator Attachment - Typical "A-B-C-E and F" Styles

STATION WAGON FOLDING REAR SEATS AND FLOOR PANELS - All "A and B" Station Wagon Styles

DESCRIPTION

All station wagon second seat backs incorporate seat back locks located on the upper right side of the seat backs. On "B" body wagon split second seats, a seat back lock is located at the upper outer side of each seat back. The 2/3 seat back lock can be unlocked from either the right or left side of the seat.

On three-seat station wagons, the third seat back incorporates a lock located at the right lower side of the third seat back. On "B" body wagons the third seat lock is unlocked by lifting the lock remote control handle located on right wheelhouse trim panel. When unlocked, the seat lowers into load floor position by means of a torque rod located in the seat back.

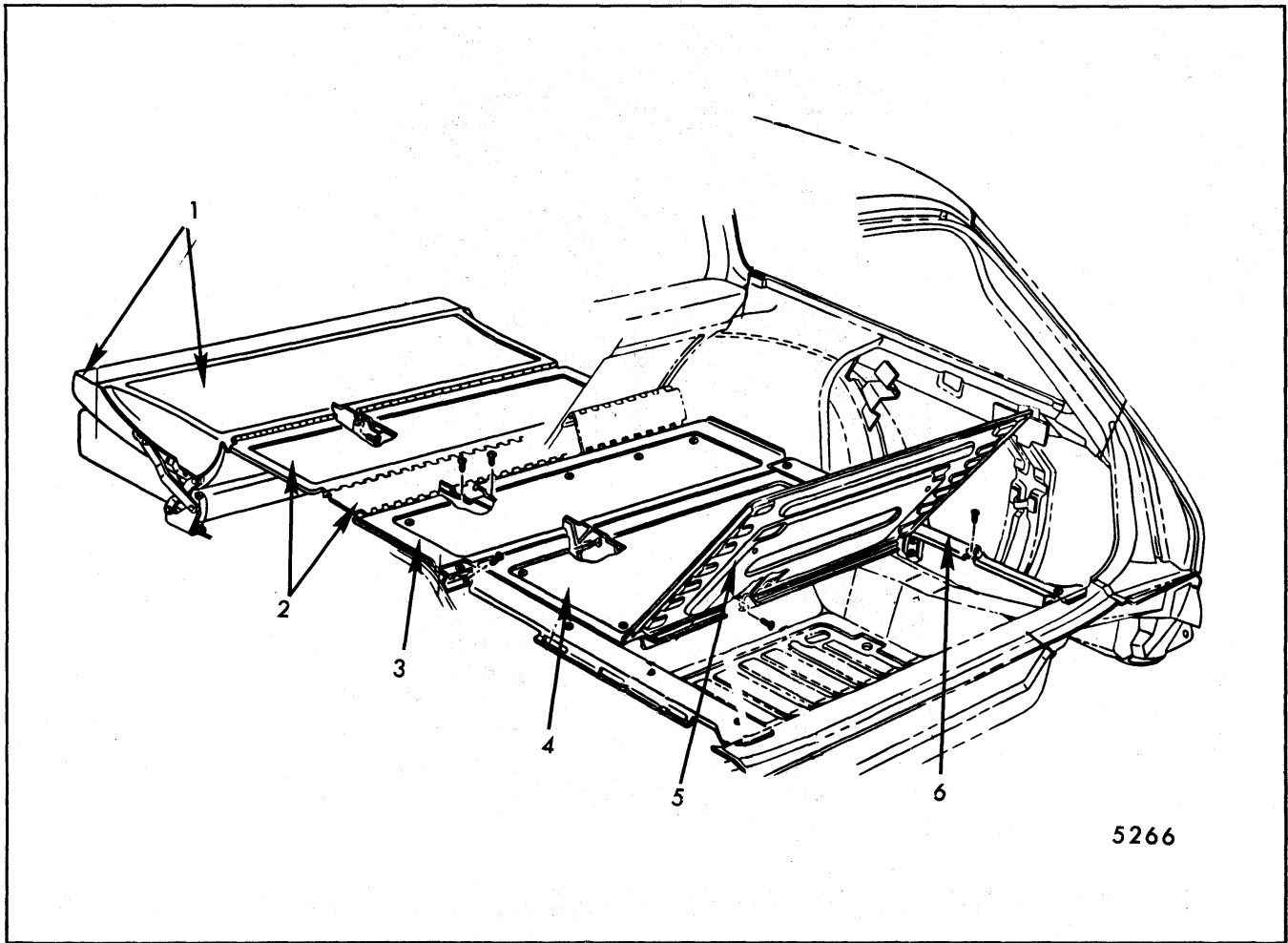
CAUTION: Station wagon second and third seat attaching parts such as seat linkage-to-floor pan and seat linkage-to-seat cushion or back bolts on nuts, seat back lock bolts, etc., are important attaching parts in that they

could affect the performance of vital components and systems. They must be replaced with an identical part or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.

The following views are typical of the station wagon folding seats and rear compartment floor panels.

These illustrations identify the component panels of the rear compartment area and their relationship to adjacent panels.

1. Figure 9-86 is typical of all "A" body three-seat station wagon styles.
2. Figure 9-87 is typical of all two-seat station wagon styles.
3. Figure 9-88 is typical of all "B" body three-seat station wagon styles.



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Fig. 9-86-Folding Seats and Load Floor Panels - "A" Body Three-Seat Station Wagon Styles

- | | | | |
|--|--|--------------------------------------|-----------------------------------|
| 1. Folding Second Seat Back and Back Panel | 3. Rear Compartment Floor Panel (At Kick-Up) | 4. Folding Third Seat Back and Panel | 5. Luggage Compartment Rear Panel |
| 2. Second Seat Back Filler Panels | | | 6. Side Filler Panels |

REAR FLOOR SIDE FILLER PANEL (Right or Left Side) - "A and B" Body Two-Seat and Three-Seat Styles

Removal and Installation - Refer to Fig. 9-90

1. Remove attaching screws from top of panel. If removing right side filler panel, remove spare tire cover panel and remove screws securing filler panel, then remove panel.

On "A" body three-seat styles remove side filler panel supports.

2. To install filler panel, reverse removal procedure. If installing a new filler panel, apply cloth body tape over screw attaching holes prior to installation.

LUGGAGE COMPARTMENT PANEL(S) AND PANEL HINGE ASSEMBLY - Two and Three-Seat Styles

Removal and Installation

1. Raise luggage compartment panel sufficiently to gain access to panel piano hinge attaching screws; then support panel in this position and remove panel to hinge attaching screws.
2. On "A" three-seat styles remove three seat back panel to seat back cushion attaching screws.
3. To install, reverse removal procedure.

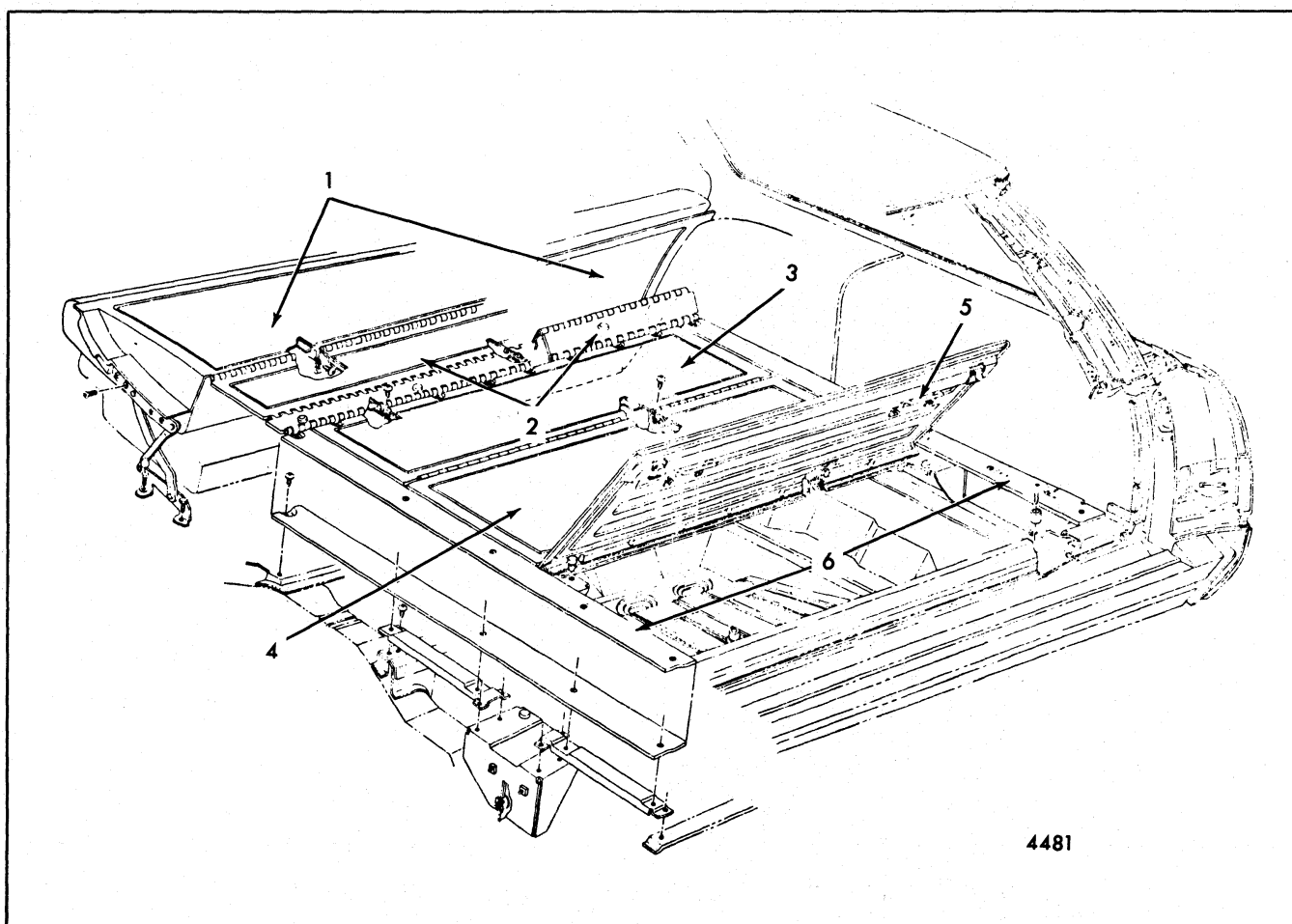


Fig. 9-87-Folding Seats and Load Floor Panels - "A and B" Body Two-Seat Styles

- | | | | |
|--|--|------------------------------------|-----------------------------------|
| 1. Folding Second Seat Back | 3. Rear Compartment Floor Panel (At Kick-Up) | 4. Luggage Compartment Front Panel | 5. Luggage Compartment Rear Panel |
| 2. Folding Second Seat Back Filler Panel | | | 6. Rear Floor Side Filler Panels |

FOLDING THIRD SEAT CUSHION - "A" Body Three-Seat Styles

Removal and Installation

1. Lift third seat back to full raised position.
2. Remove two seat cushion to seat support attaching bolts then disengage seat belts from belt holders and remove cushion (Fig. 9- 89).
3. To install, reverse removal procedure.

FOLDING THIRD SEAT BACK TRIM ASSEMBLY - "A" Body Three-Seat Styles

Removal and Installation

1. Raise third seat back assembly to vertical position.
2. Remove three screws securing top edge of seat back trim to seat back panel.
3. Pull top edge of seat back trim slightly rearward;

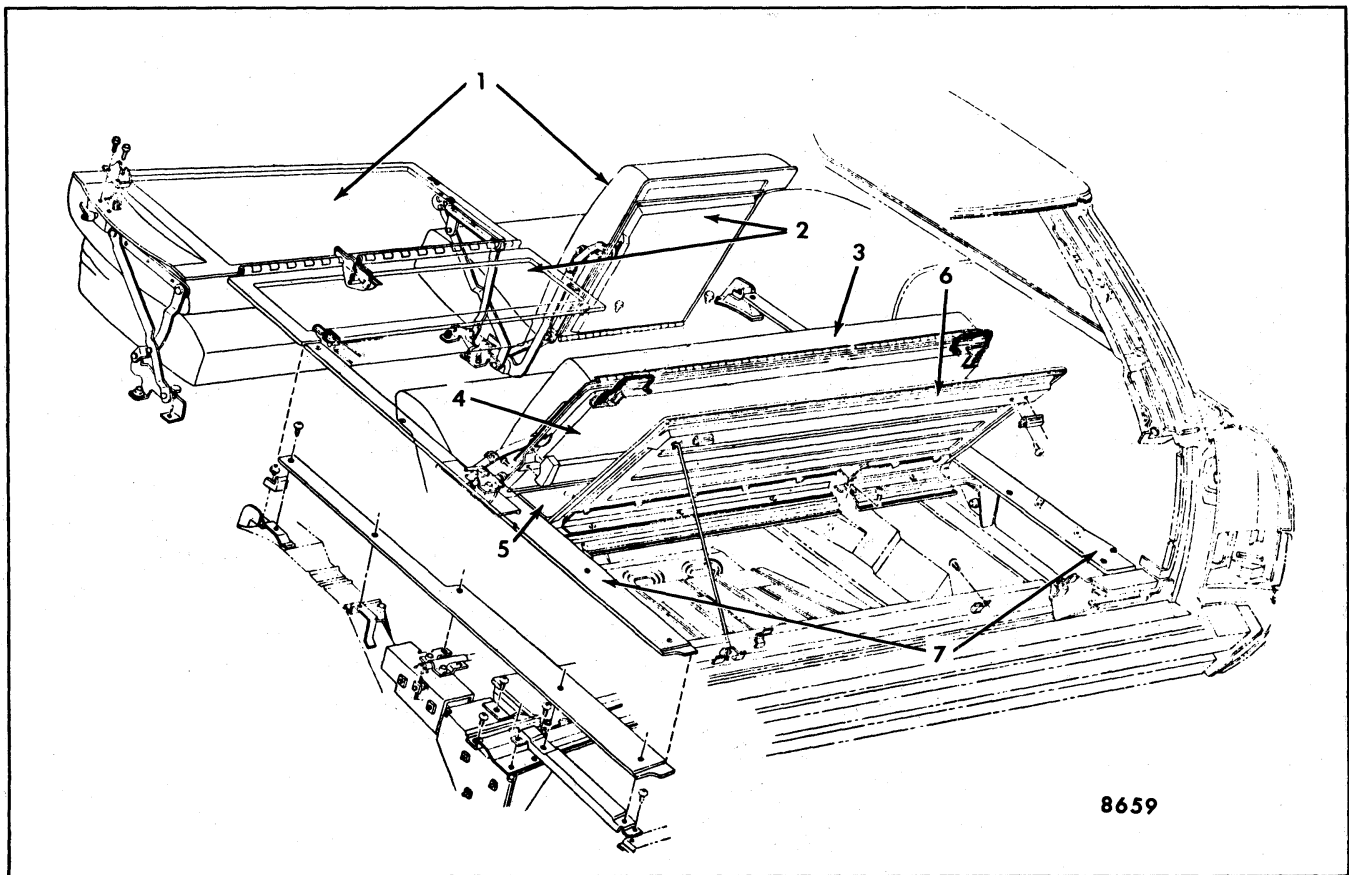


Fig. 9-88-Folding Seats and Load Floor Panels - "B" Body Three-Seat Styles

- | | | | |
|--|---|-------------------------------------|----------------------------------|
| 1. Folding Second Seat Backs (1/3 and 2/3 Seats) | 2. Second Seat Back Filler Panels (1/3 and 2/3 Seats) | 4. Third Seat Back Filler Panel | 6. Luggage Compartment Panel |
| | 3. Folding Third Seat Back | 5. Luggage Compartment Filler Panel | 7. Rear Floor Side Filler Panels |

then lift trim assembly upward to disengage tabs from three seat back trim foundation retainers on lower portion of panel. Remove trim assembly from body and place on a clean, protected surface.

- To install, reverse removal procedure. Make sure seat back trim foundation tabs are engaged with all three retainers at lower portion of panel prior to installing seat back trim attaching screws.

FOLDING THIRD SEAT BACK PANEL ASSEMBLY - "A" Body Three-Seat Styles

Removal and Installation

- Lift third seat back to full raised position and

remove seat back cushion as previously described.

- Remove right and left side filler panels and detach side filler panel supports (Fig. 9-90).
- Remove pivot support and lock covers.
- Remove three pivot and lock support attaching bolts (right and left side) then lift seat back panel, pivot and lock support assembly from body (Fig. 9-90).
- To detach support and lock assembly from seat back panel remove two attaching bolts securing support to panel (Fig. 9-90).
- To install, reverse removal procedure.

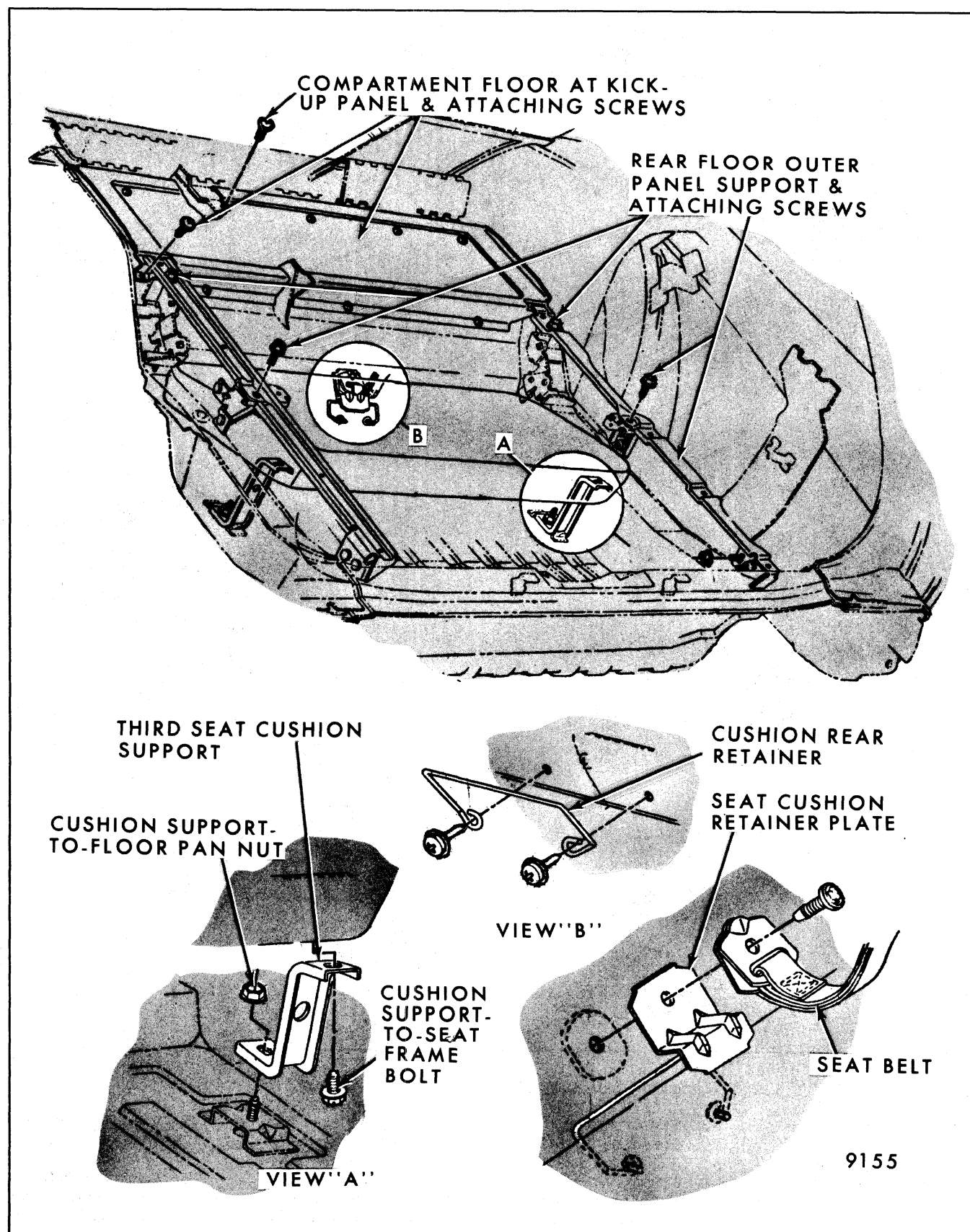


Fig. 9-89-Folding Third Seat Cushion - "A" Body Three-Seat Styles

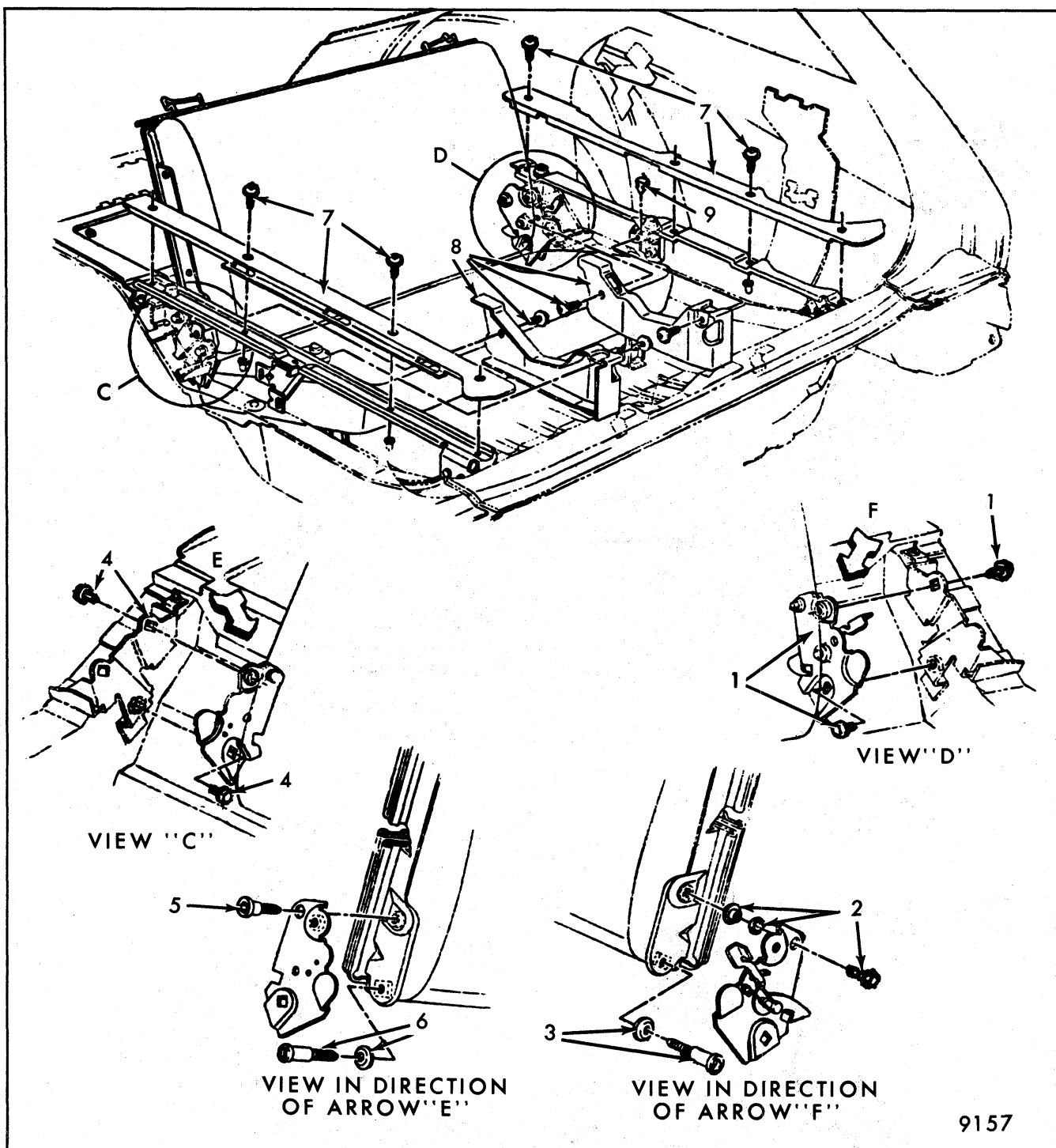


Fig. 9-90-Folding Third Seat Back and Lock Installation - "A" Body Three-Seat Styles

- | | | | |
|--|--|--|--|
| 1. Seat Back Lock and Lock-to-Body Attaching Screw (Right Side of Body) | 3. Seat Back Lock Striker and Washer (Right Side of Body) | 5. Seat Back Panel and Panel-to-Support Pivot Bolt (Left Side of Body) | 7. Load Floor Side Filler Panels and Attaching Screws |
| 2. Seat Back Panel-to-Lock Pivot Bolt, Bushing and Washer (Right Side of Body) | 4. Seat Back Support and Support-to-Body Attaching Bolts (Left Side of Body) | 6. Seat Back Striker and Washer (Left Side of Body) | 8. Folding Third Seat Pivot Support, Lock and Stop Cover and Fasteners |
| | | | 9. Folding Third Seat Back Bumper |

FOLDING THIRD SEAT BACK LOCK AND PIVOT SUPPORT (Right Side) PIVOT SUPPORT (Left Side)

Removal and Installation

1. Raise third seat back to full-up position.
2. Remove side filler panel and side filler panel support.
3. Remove pivot support and lock cover.
4. Remove three pivot and lock assembly attaching bolts.
5. Lift seat back assembly upward to obtain access to the pivot and lock assembly to seat back panel attaching bolt.
6. To install, reverse removal procedure. Check operation of third seat to assure proper operation of lock.

COMPARTMENT FLOOR PANEL ASSEMBLY (At Kick-Up) - "A" Body Two and Three-Seat Styles, "B" Body Two-Seat Styles - See Figs. 9-86 and 9-87

Removal and Installation

1. On "A" body three-seat styles, remove folding third seat back assembly as previously described.
2. On two-seat styles, remove luggage compartment front and rear panel assemblies (complete) as previously described.

On "A" body three seat styles raise third seat back sufficiently to gain access to panel-to-floor pan attaching screws at rear edge of panel.

3. On "B" styles directly under rear edge of compartment floor panel remove four screws securing panel to floor pan.

On "A" body three-seat styles remove seven panel to floor pan attaching screws.

4. At front of compartment floor panel remove five screws securing panel to floor pan; then remove compartment floor panel from body.
5. To install, reverse removal procedure.

SECOND SEAT BACK FILLER PANEL - "A" Body Two and Three-Seat Styles and "B" Body Two-Seat Styles

Removal and Installation

1. Remove compartment floor panel assembly (at kick-up) as previously described.
2. Along rear edge of filler panel, remove screws which secure panel to floor pan.
3. Fold filler panel forward sufficiently to remove screws which secure panel to folding second seat back assembly and remove filler panel from body.
4. To install, reverse removal procedure.

SECOND SEAT CUSHION - "A" Body Two-Seat and Three-Seat Styles

Removal and Installation

1. Remove two seat cushion wire attaching bolts at forward edge of seat cushion. Then lift upward and pull forward on seat cushion to remove (Fig. 9-91).
2. To install, reverse removal procedure.

FOLDING SECOND SEAT BACK TRIM PANEL AND LINKAGE ASSEMBLY - "A" Body Two-Seat and Three-Seat Styles

Removal and Installation

1. Raise folding second seat back and remove second seat cushion.
2. On underside of folding second seat back remove screws securing rear floor filler panel hinge to seat back panel.

NOTE: Do not remove screws securing seat back trim assembly to seat back panel.

3. Mark position of folding second seat back linkage supports on floor pan. Remove nuts from both sides of seat back securing linkage supports to floor pan (Fig. 9-92).

Lift seat back assembly with attached linkage from body and place on a clean, protected surface.

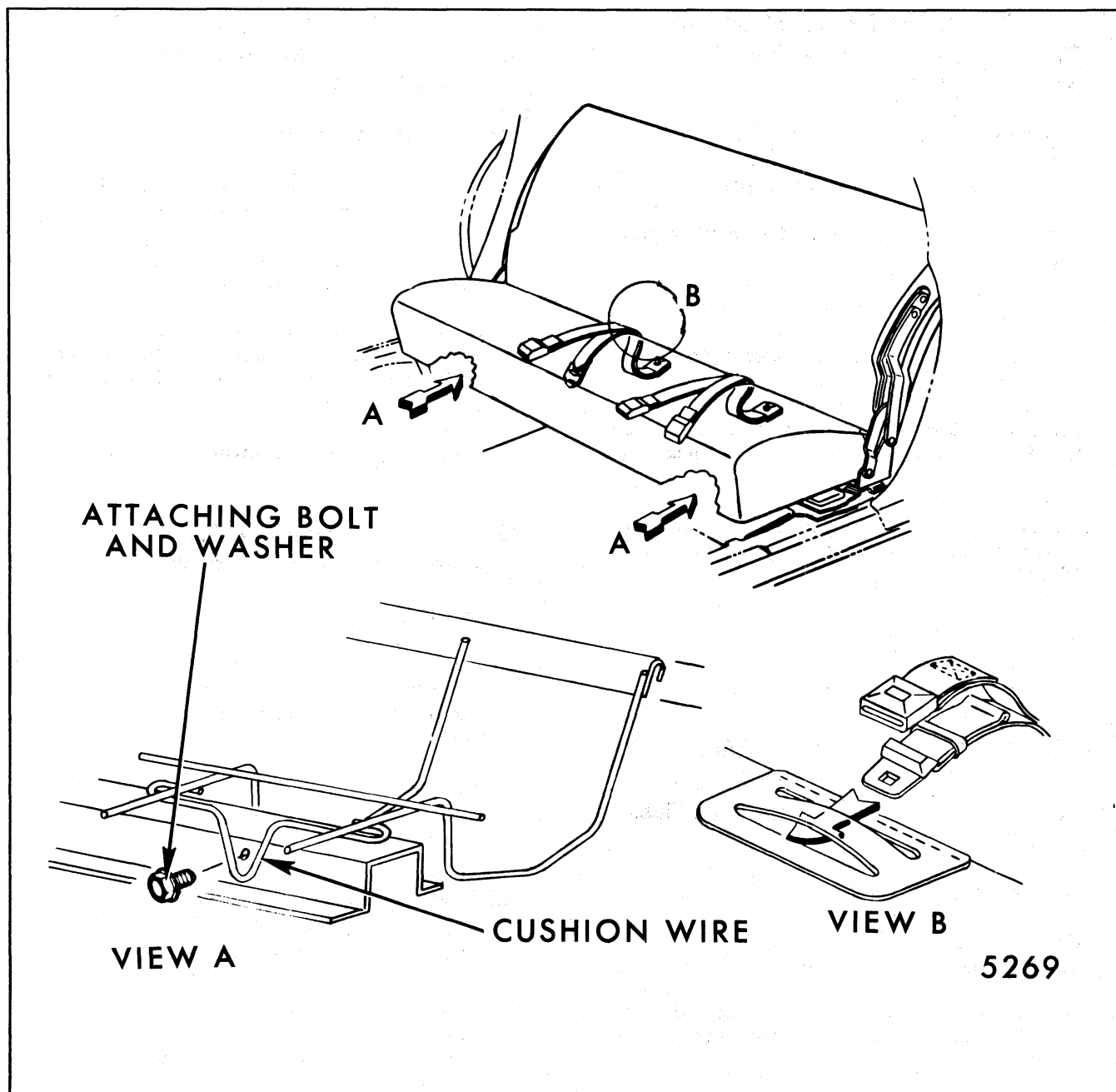


Fig. 9-91-Second Seat Cushion Attachment - "A" Body Two and Three-Seat Styles

4. To remove linkage from folding second seat back remove linkage-to-seat back panel attaching bolts and remove linkage (see Fig. 9-92).
5. To install, reverse removal procedure.

FOLDING SECOND SEAT BACK LINKAGE ASSEMBLY (Right or Left Side) - "A" Body Two-Seat and Three-Seat Styles

If both right and left linkage assemblies are to be

removed on full width second seat, remove second seat back trim, back panel and linkage assembly and remove linkage from seat back panel as described under "Folding Second Seat Back Trim, Panel and Linkage Assembly - Removal and Installation".

If one linkage assembly (right or left side) is to be removed proceed as follows:

Removal and Installation

1. Remove second seat cushion.

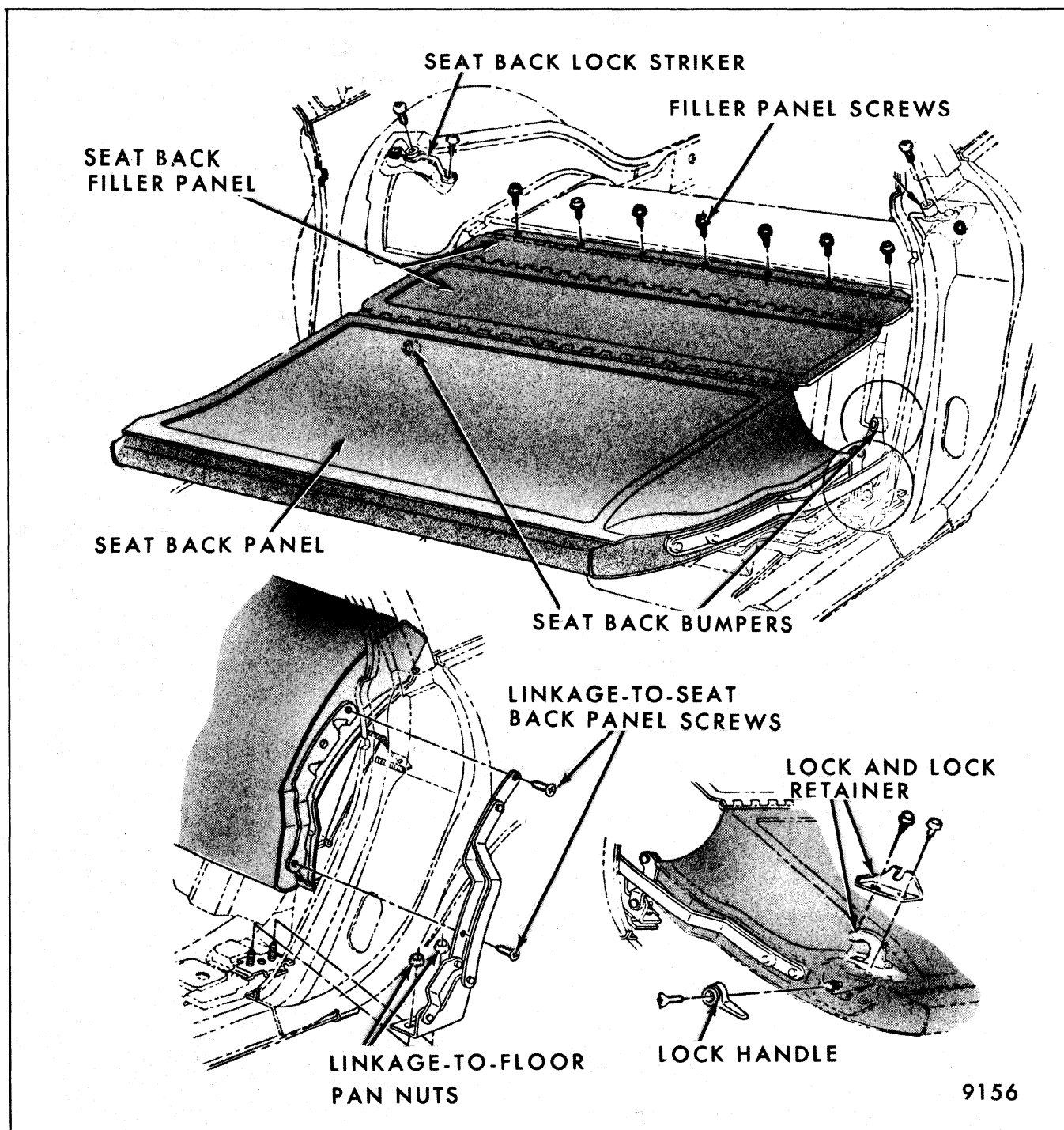


Fig. 9-92-Folding Second Seat Back Linkage and Filler Panel - "A" Body Two-Seat and Three-Seat Styles

2. Move folding second seat back forward just sufficiently to remove two linkage-to-seat back panel attaching screws (see Fig. 9-92).
3. Carefully return seat back to full-up position; then place a support under seat back assembly to support seat back in this position.
4. Remove nuts securing linkage support to floor pan, then carefully remove linkage assembly from seat back and floor pan (see Fig. 9-92).
5. To install, reverse removal procedure.

LUGGAGE COMPARTMENT LOCK CYLINDER - Two-Seat Styles

Removal and Installation

1. Open luggage compartment rear panel.
2. On underside of luggage compartment rear panel remove catch retainer and catch from lock cylinder case, then turn lock cylinder with key until cylinder can be removed from case (Fig. 9-93).
3. To install, reverse removal procedure.

LUGGAGE COMPARTMENT LOCK

Removal and Installation

1. Open luggage compartment rear panel.
2. On underside of luggage compartment rear panel, remove catch retainer and catch (Fig. 9-93).
3. Remove lock cylinder case retainer screw and retainer; then remove lock cylinder and case, gasket and escutcheon from panel (Fig. 9-93).
4. To install, reverse removal procedure.

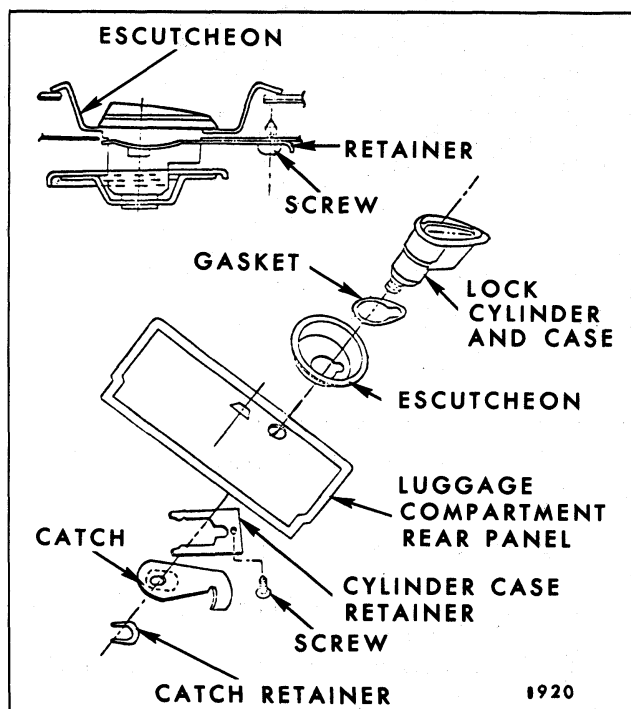


Fig. 9-93-Luggage Compartment Lock - "A" Body Styles

FOLDING SECOND SEAT BACK LOCK (Full Width Seat) - All "A" Styles and "B" Body Two-Seat Styles

Description

The station wagon full width folding second seat incorporates a seat back lock located on the upper right side of the seat back. The folding second seat can be folded down by actuating the lock handle forward and pulling the seat back down.

Removal and Installation

1. Remove folding second seat back trim and spring assembly as previously described.
2. Remove seat back lock handle attaching screw and remove lock handle (Fig. 9-94).
3. Remove seat back lock retainer attaching screws and remove seat back lock retainer and lock from seat back panel (Fig. 9-94).
4. To install seat back lock assembly, reverse removal procedure. A small amount of lock adjustment is available to obtain proper engagement of lock bolt with lock striker on wheelhouse as shown in Figure 9-95.

FOLDING SEATS AND LOAD FLOOR PANELS - "B" Body Station Wagons

The "B-35" body style two-seat station wagon second seat and load floor panels are very similar to the "A" body two-seat station wagons (see Fig. 9-87).

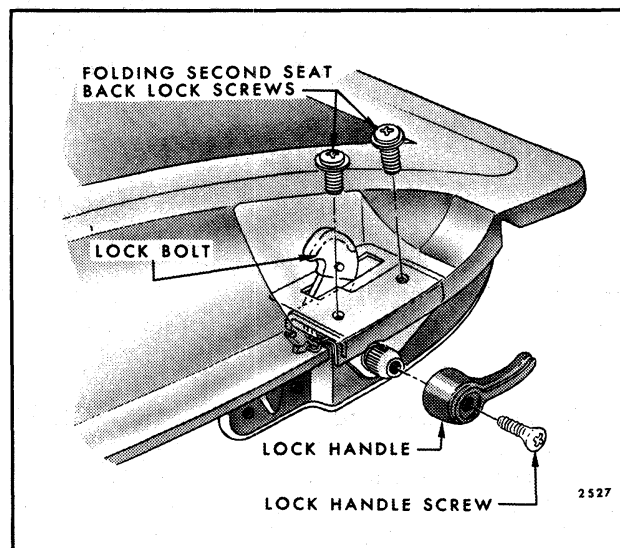


Fig. 9-94-Folding Second Seat Back Lock Installation - All "A and B" Station Wagons

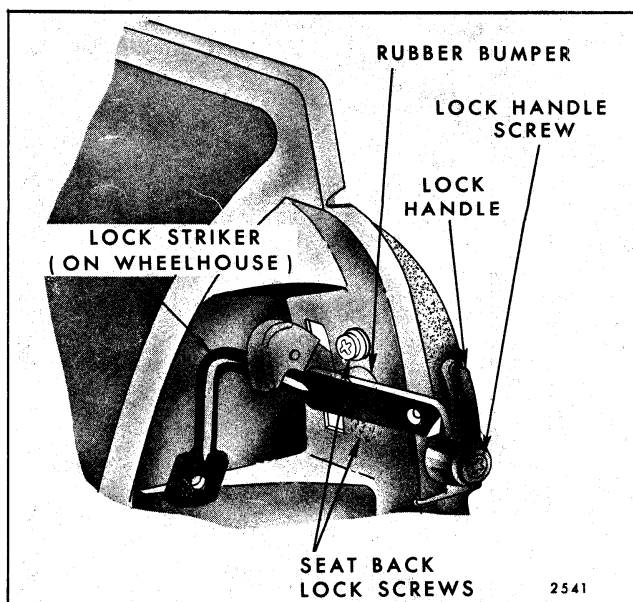


Fig. 9-95-Folding Second Seat Back Lock and Striker - All "A and B" Station Wagons

The "B" body three-seat station wagon has a split second seat (2/3 left side and 1/3 right side) see Figure 9-88. The 1/3 right side second seat has a dual action linkage which allows the seat to be moved either forward for access or entrance into the third seat area or allows the seat back to be lowered into load floor position. The dual action linkage incorporates two separate locks which lock the seat and the seat back when the seat is in the up (sitting) position. When the seat back lock is released, the linkage lock remains locked allowing the entire 1/3 seat to be forward for access or entrance into the third seat area. When the linkage lock is released (depressed), the seat back lock is also released by means of a synchronizing rod which allows the seat back to be lowered into load floor position.

The 2/3 left side second seat linkage allows the seat back to be placed in load floor position only. The seat back incorporates a positive acting seat back lock on the left side of the seat back which locks the seat back in the up (sitting) position and can be unlocked from the right side of the seat at the lock or from the left side of the seat by means of the remote control handle.

The forward facing third seat incorporates a remote controlled seat back lock at lower right side of seat back. When the third seat back lock is released by lifting the remote control handle on the forward portion of the right wheelhouse (see Fig. 9-103), the third seat back will lower into load floor position.

SECOND SEAT CUSHION - "B" Body "35" Style and "45" Styles 2/3 Second Seat

To remove the second seat cushion on two seat styles or the second 2/3 seat cushion on three seat styles, remove both the right and left side seat linkage-to-floor pan front bolt (see Figs. 9-96 and 9-97); then lift cushion upward to disengage cushion retainers from floor pan studs, and remove cushion. To install, reverse removal procedure.

To remove the right side second seat cushion (1/3 seat) on three-seat station wagon styles, place the seat assembly in the forward position. From under both rear and front of seat cushion remove bolts securing cushion assembly to inner and outer rear linkage (see Figs. 9-97 and 9-98) and to front linkage; then remove cushion assembly.

FOLDING SECOND SEAT BACK TRIM, FOAM PAD AND WIRE FRAME ASSEMBLY - "A and B" Body Two-Seat and Three-Seat Station Wagons

Removal and Installation

1. Lower folding second seat back to load floor position, leave filler panel against seat back.
2. At bottom of seat back and at cut-outs in filler panel piano hinge, remove five trim and foam pad wire mat attaching screws.
3. Raise seat back sufficiently to pull lower edge of trim, foam pad and wire mat forward; then lift assembly upward to disengage upper edge of assembly from hanger tabs on seat back panel and remove assembly.
4. To install, reverse removal procedure. Use awl or suitable tool to locate wire mat attaching holes through bottom of seat back panel.

FOLDING SECOND SEAT BACK AND FILLER PANEL ASSEMBLY (Less Linkage) - "B" Body Three-Seat Station Wagons

Removal and Installation

1. Lower seat back to load floor position, leave filler panel against seat back.
2. At both right and left side of seat back, remove linkage to seat back panel attaching screws (Fig. 9-96, Item 6 and Fig. 9-97, Item 2) and remove

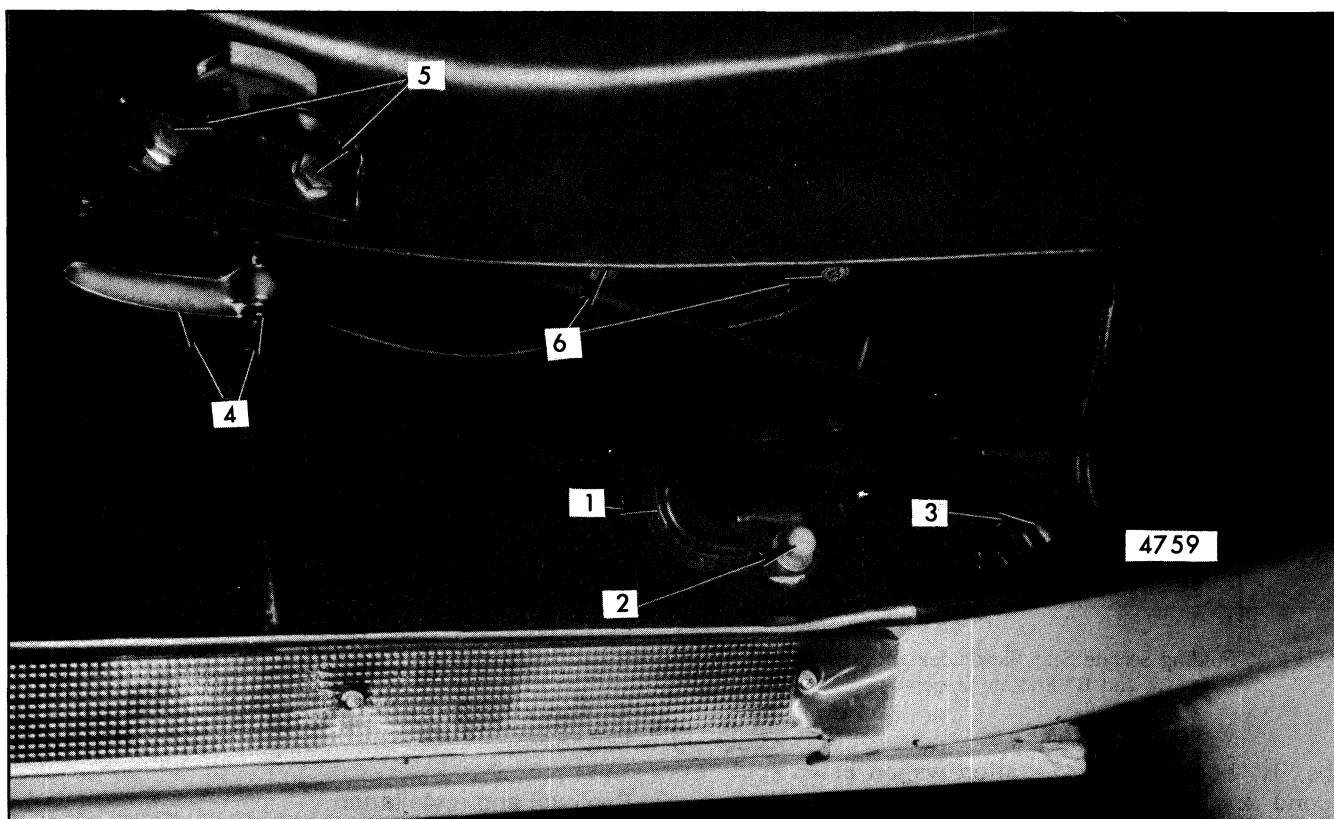


Fig. 9-96-Folding Second 2/3 Seat Back Outer Linkage and Seat Back Lock - "B" Body Three-Seat Station Wagon Shown (Two-Seat Station Wagon Typical)

- | | | |
|--|---|--|
| 1. 2/3 Cushion Outer Retainer - Same Retainer Used on Both Sides of Two-Seat Station Wagon Second Seat Cushion | 2. Cushion and Linkage-to-Floor Pan Attaching Nut and Finishing Cap | 4. Lock Handle and Attaching Screw |
| | 3. Lap Belt and Linkage-to-Floor Pan Attaching Bolt - Torque | 5. Lock Retainer and Lock Attaching Screws |
| | | 6. Linkage-to-Seat Back Attaching Screws |

seat back assembly with filler panel from linkage.

ing screws (Figs. 9-96 and 9-97) and remove linkage assembly.

3. To install second seat back and filler panel assembly, reverse removal procedure.

3. To install linkage assembly, reverse removal procedure.

FOLDING SECOND SEAT BACK LINKAGE ASSEMBLY - "A" Body Two and Three-Seat Styles, "B" Body Two-Seat Styles and "B" Body 2/3 Seat Outer Linkage Assembly

Removal and Installation

1. Lower folding second seat back to load floor position, leave filler panel against seat back.
2. Remove linkage-to-seat back panel attaching screws, then remove linkage-to-floor pan attach-

FOLDING SECOND (2/3) SEAT BACK ASSEMBLY AND/OR (2/3) SEAT BACK INNER LINKAGE ASSEMBLY - "B" Body Three-Seat Station Wagon

Removal and Installation

1. Remove 2/3 seat cushion assembly.
2. Loosen 1/3 seat torque rod-to-floor pan attaching nut (see Fig. 9-97, No. 7). Move 1/3 seat

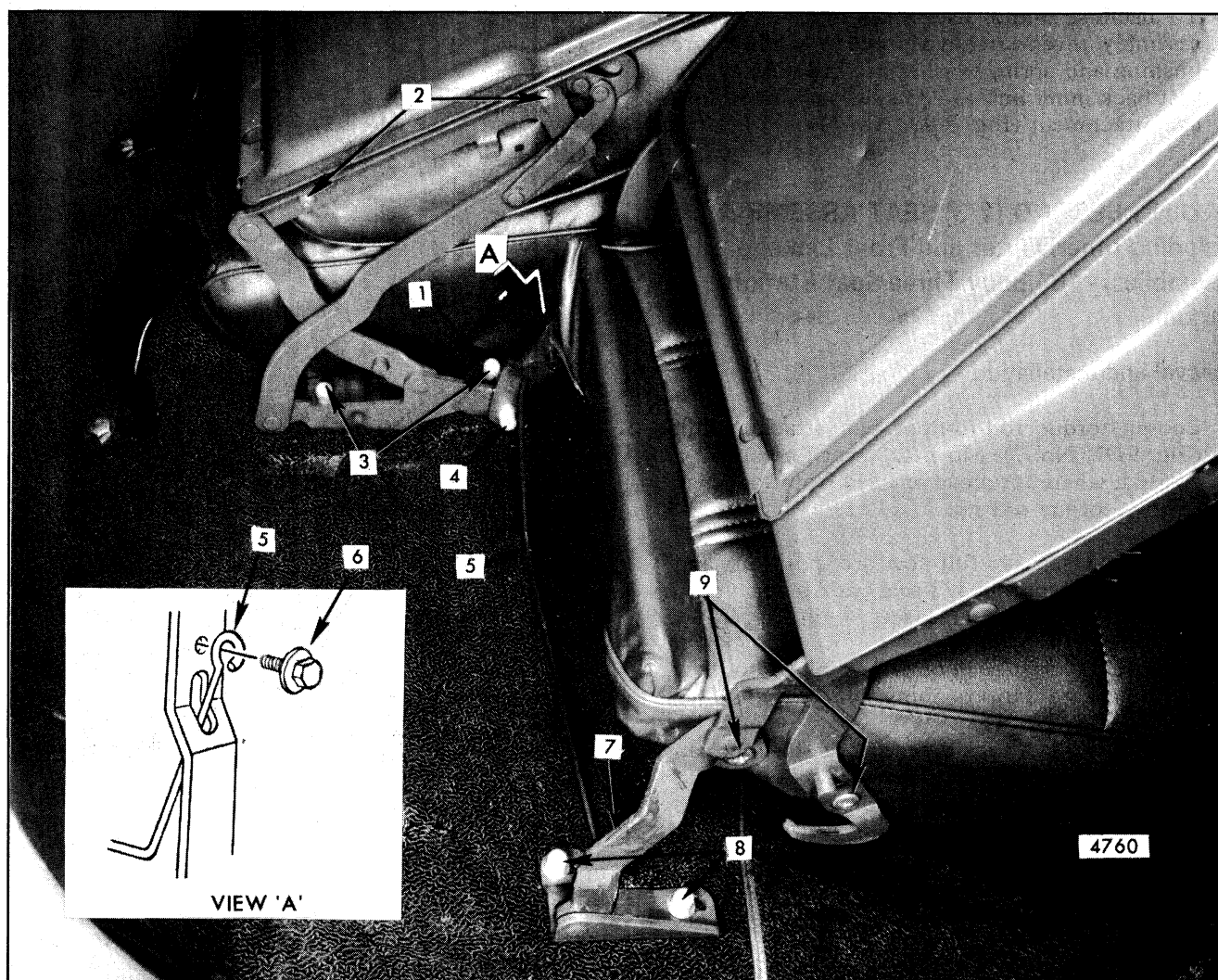


Fig. 9-97-Folding Second 2/3 Seat Back Inner Linkage and 1/3 Seat Back Outer Linkage - "B" Body Three-Seat Station Wagon

- | | | | |
|--|--|---|---|
| 1. 2/3 Seat Cushion Inner Attachment-Cushion Wire Frame Secured Under Linkage Attaching Nut and Stud Cap | 3. 2/3 Seat Back Inner Linkage-to-Floor Pan Attaching Nuts and Stud Caps | 5. 1/3 Seat Assist Torque Rod | 8. 1/3 Seat Outer Linkage-to-Floor Pan Attaching Nuts and Stud Caps |
| 2. Linkage-to-Seat Back Attaching Screws | 4. 1/3 Seat Back Inner Linkage-to-2/3 Seat Back Inner Linkage Attaching Nut and Stud Cap | 6. 1/3 Seat Assist Torque Rod-to-Inner Linkage Attaching Bolt | 9. 1/3 Seat Outer Linkage-to-Seat Cushion Frame Attaching Screws |
| | | 7. Location of Assist Torque Rod-to-Floor Pan Stud Attaching Nut and Stud Cap | |

forward to a position where torque is relieved from rod; then remove torque rod nut.

3. Remove 1/3 seat back inner link-to-2/3 seat back inner link attaching nut (see "4" in Fig. 9-97).
4. Remove 2/3 seat back inner linkage-to-floor pan attaching bolts or nuts (see "3" in Fig. 9-97).
5. Remove 2/3 seat back outer linkage-to-floor pan attaching bolts or nuts (see "2" and "3" in Fig. 9-96); then remove second 2/3 seat assembly including linkages from body.
6. If removing inner linkage assembly, remove inner linkage to seat back panel attaching screws as a bench operation and remove linkage assembly from seat back.

7. To install second 2/3 seat back or inner linkage assembly, reverse removal procedure. Make sure bushing and spring washer are installed at 1/3 seat back inner link-to-2/3 seat back inner linkage attachment (Fig. 9-97, No. 4).

FOLDING SECOND (1/3) SEAT ASSEMBLY (Including Inner, Outer and Front Linkage Assemblies) - "B" Body Three-Seat Station Wagon

Removal and Installation

1. Loosen torque rod-to-floor pan attaching nut (Fig. 9-97, No. 7). Move 1/3 seat forward to a position where torque is relieved from rod; then remove torque rod nut.
2. Move 1/3 seat to full forward position, and remove nut securing 1/3 seat back inner link to 2/3 seat back inner link (see "4" in Fig. 9-97).
3. Remove 1/3 seat cushion front linkage-to-floor pan stud caps and attaching nuts (Fig. 9-98).
4. Remove 1/3 seat back outer linkage-to-floor pan stud caps and attaching nuts (Fig. 9-98); then remove seat assembly including all attached linkages from body.

Linkage assemblies may be removed from 1/3 seat as required. Refer to Figures 9-97 and 9-98 for 1/3 seat linkage attachments.

5. To install 1/3 seat assembly, reverse removal procedure. Make sure that bushing and spring washer is installed at 1/3 seat back inner link-to-2/3 seat back inner link (see Fig. 9-97, No. 4).

FOLDING SECOND (1/3) SEAT BACK OUTER LINKAGE ASSEMBLY - "B" Body Three-Seat Station Wagon

Removal and Installation

1. Fold right 1/3 seat back to a position where seat back outer linkage-to-seat back screws, indicated in Figures 9-97 and 9-98, are accessible; then remove screws.
2. Remove seat back outer linkage-to-seat cushion screws (Fig. 9-98) and outer linkage to seat back panel screw.
3. Remove seat back outer linkage-to-floor pan at-

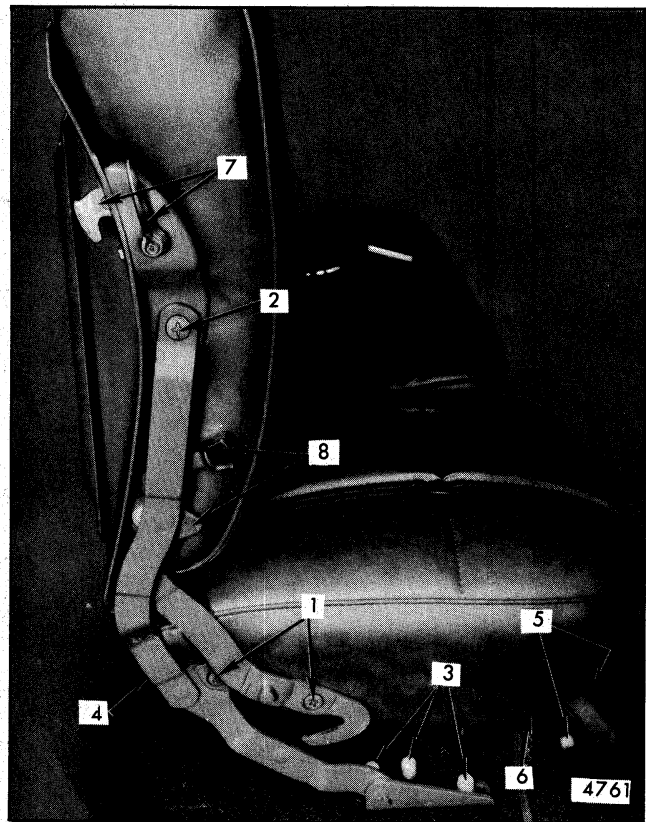


Fig. 9-98-Folding Second 1/3 Seat Back Outer Linkage, Seat Back Lock and Linkage Lock - "B" Body Three-Seat Station Wagon

- | | |
|---|---|
| 1. 1/3 Seat Outer Linkage-to-Cushion Frame Attaching Screws | 6. 1/3 Seat Front Linkage-to-Cushion Frame Attaching Bolts (Under Front of Seat) |
| 2. 1/3 Seat Outer Linkage-to-Seat Back Panel Attaching Screw | 7. Seat Back Lock-When released (handle pulled forward) seat can be tilted forward for access to third seat area. |
| 3. 1/3 Seat Outer Linkage-to-Floor Pan Attaching Nuts and Stud Caps | 8. Seat Linkage Lock-When released (lever pushed downward) seat back can be lowered to load floor position. |
| 4. 1/3 Seat Outer Linkage-to-Cushion Frame Attaching Bolts (Under Rear of Seat) | |
| 5. 1/3 Seat Front Linkage-to-Floor Pan Attaching Nuts and Stud Caps | |

aching stud caps and nuts at locations indicated in Figure 9-98; then remove outer linkage from seat.

4. To install 1/3 seat back outer linkage assembly, reverse removal procedure.

FOLDING SECOND 1/3 SEAT BACK LOCK, LINKAGE LOCK AND SYNCHRONIZING ROD - "B" Body Three-Seat Station Wagons

Removal and Installation - See Fig. 9-99

1. Seat Back Lock Assembly - place seat back out of locked position and remove lock control handle. On rear side of seat back panel, remove two screws securing lock assembly (see "5" in Fig. 9-96); then disengage lock from eyelet end of synchronizing rod (see Fig. 9-99) and remove lock assembly. To install, reverse removal procedure.
2. Linkage Lock Assembly - unlock linkage lock and place seat back in a position where lock attaching screw (Fig. 9-99) is accessible; then remove lock attaching screw. Move lock from seat back panel sufficiently to disengage syn-

chronizing rod from retaining clip on lock, then remove linkage lock. To install, reverse removal procedure.

3. Lock Synchronizing Rod - unlock linkage lock and place seat back in a position where rod can be disengaged from retaining clip on linkage lock (Fig. 9-99). When rod is detached from linkage lock, disengage from seat back lock (see Fig. 9-99). To install, reverse removal procedure.

FOLDING SECOND 2/3 SEAT BACK LOCK, LOCK REMOTE CONTROL HANDLE AND CABLE - "B" Body Three-Seat Station Wagons

Removal and Installation - See Figs. 9-100 and 9-101

1. Seat Back Lock Assembly - place seat back out

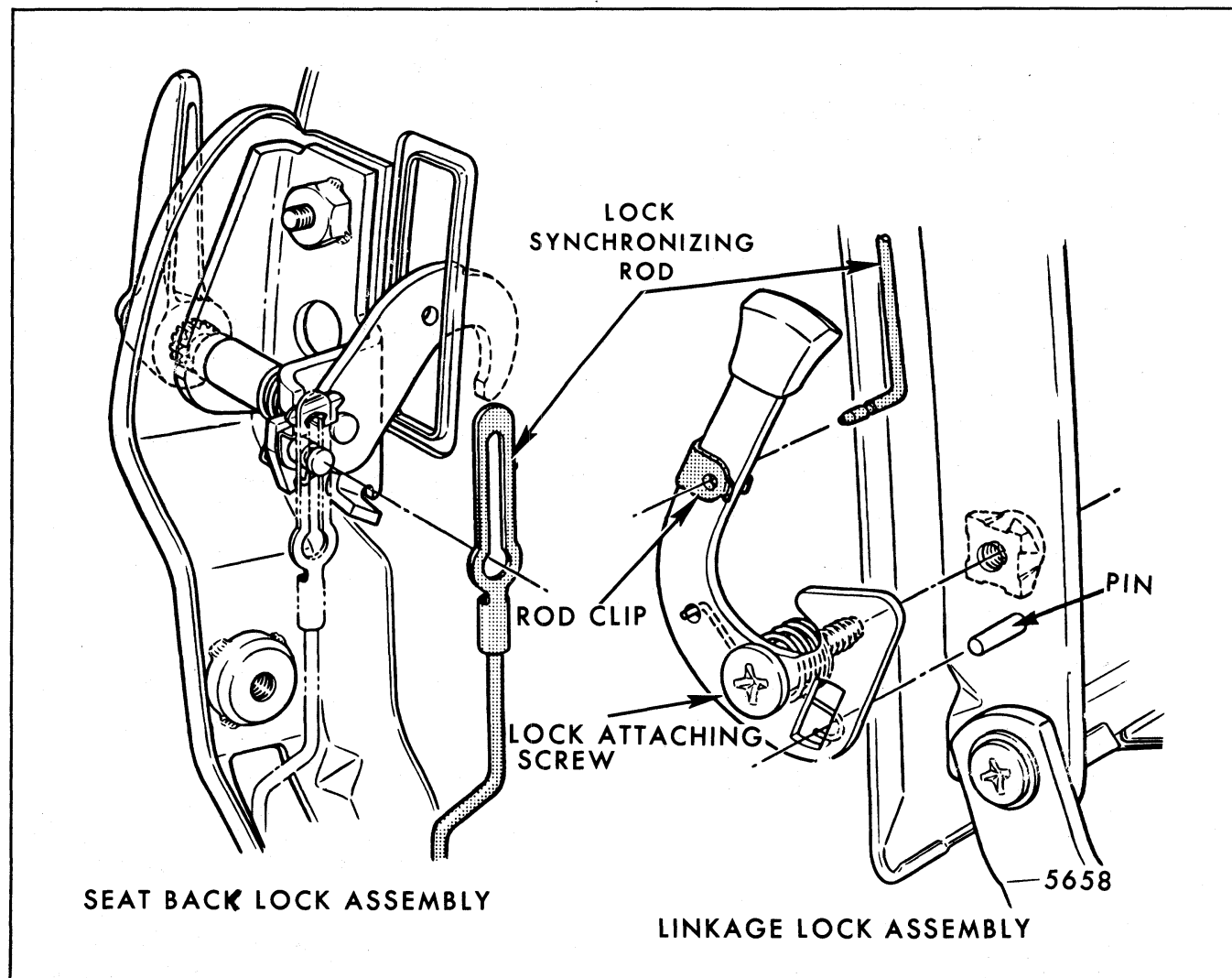


Fig. 9-99-Second 1/3 Seat Back Lock and Linkage Lock - "B" Body Three-Seat Station Wagons

of locked position and remove left side lock control handle. On rear side of seat back panel, remove two screws securing lock assembly; then disengage lock from eyelet end of remote control cable (Fig. 9-101) and remove lock assembly. To install, reverse removal procedure.

2. **Seat Back Lock Remote Control Handle Assembly** - place second 1/3 seat forward or in load floor position. Remove two screws securing handle to seat back panel (Fig. 9-100). Disengage cable retaining clip, detach remote cable from lock and remove lock assembly. To install, reverse removal procedure.
3. **Seat Back Lock Remote Control Cable** - remove seat back trim, foam pad and wire frame assembly as previously described. Remove cable support and anti-rotation clips (Fig. 9-100) from seat back panel. Disengage cable retaining clip at remote handle (Fig. 9-100); then remove cable. To install, reverse removal procedure.

THIRD SEAT BACK CUSHION ASSEMBLY - "B" Body Three-Seat Station Wagons

Removal and Installation

1. Unlock third seat back and prop seat back in a

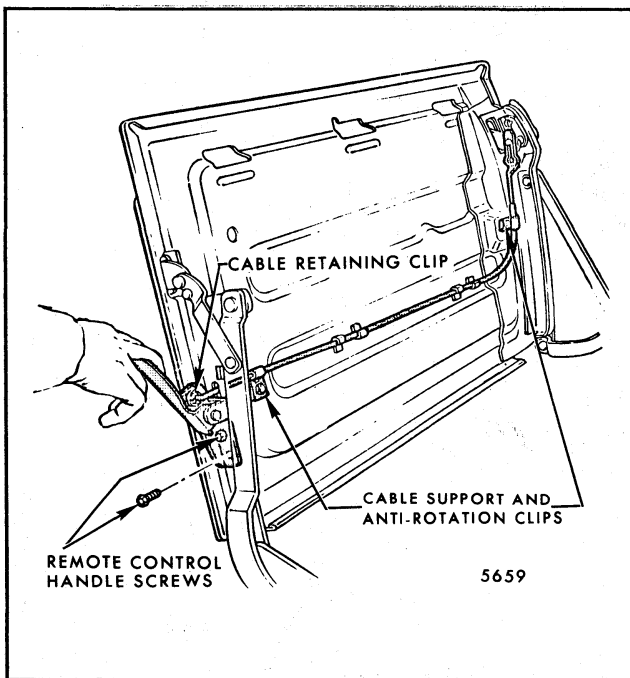


Fig. 9-100-Second 2/3 Seat Back Lock Remote Control Handle Assembly and Cable - "B" Body Three-Seat Station Wagons

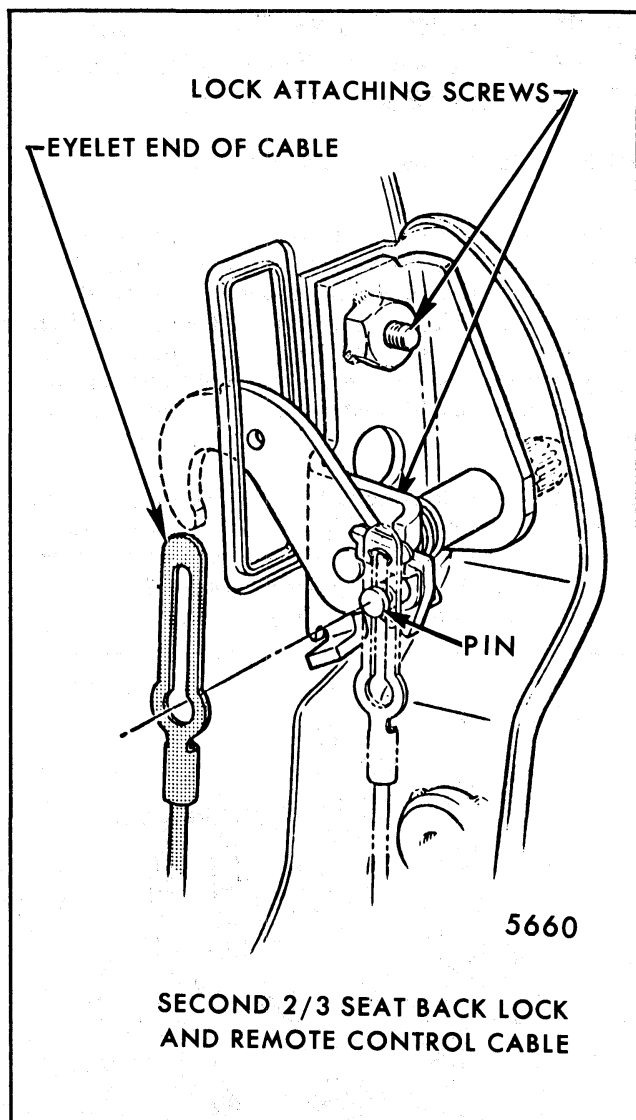


Fig. 9-101-Second 2/3 Seat Back Lock Assembly and Remote Control Cable - "B" Body Three-Seat Station Wagons

partial "up" position to provide access between cushion and back to cushion-to-floor pan rear attaching nuts (Fig. 9-102).

2. Remove cushion-to-floor pan rear attaching nuts (Fig. 9-102); then pull cushion forward and upward to disengage cushion front brackets from floor pan retainers (Fig. 9-102) and remove cushion assembly.
3. To install cushion assembly, reverse removal procedure (see insets in Fig. 9-102), make sure all seat brackets are engaged with retainers on floor pan.

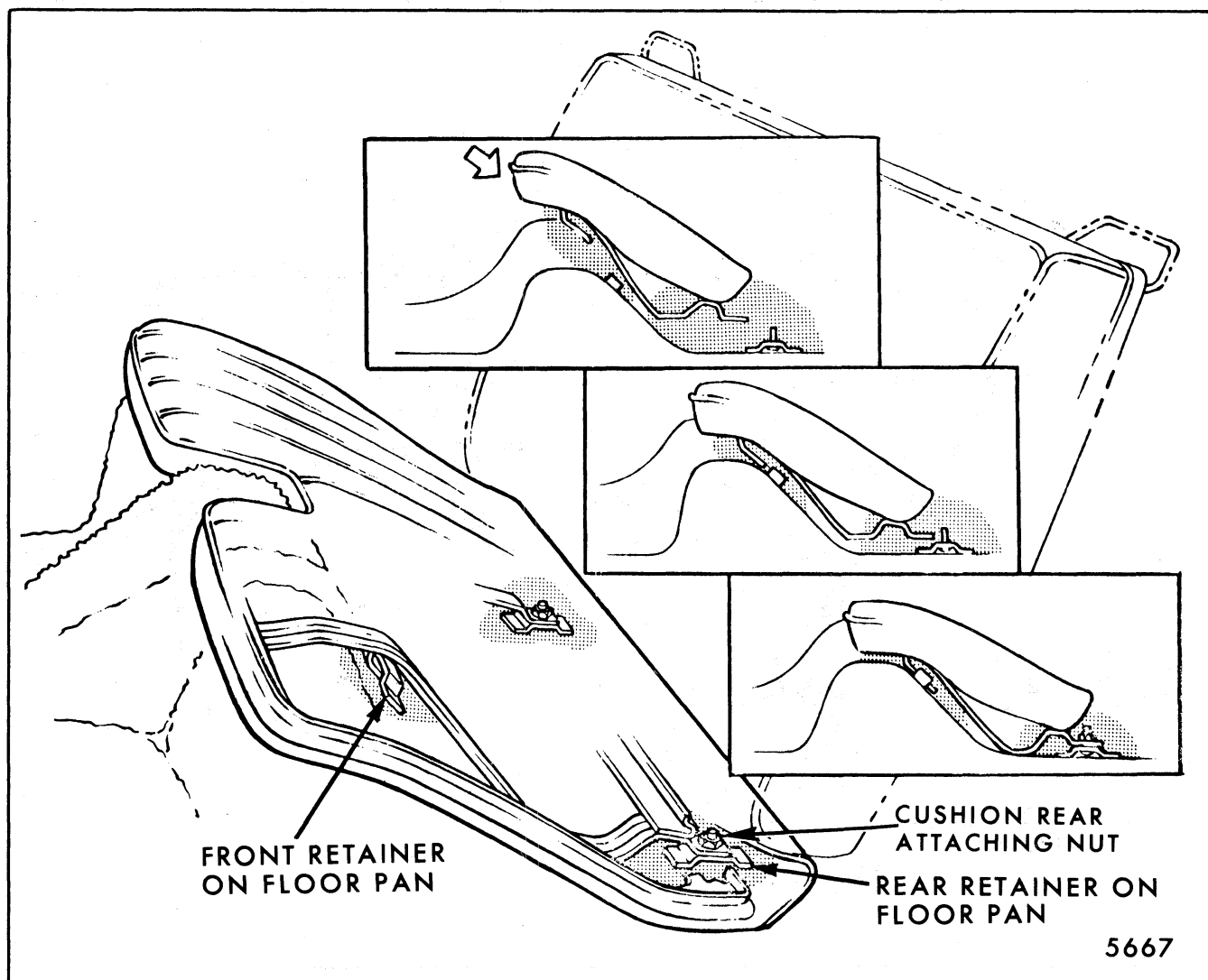


Fig. 9-102-Third Seat Cushion Installation - "B" Body Three-Seat Station Wagons

FOLDING THIRD SEAT BACK ASSEMBLY AND/OR TORQUE ROD - "B" Body Three-Seat Station Wagons

Removal and Installation

1. Remove both right and left side rear floor side filler panels (see Fig. 9-88).
2. Lower seat back to load floor position; then remove retainer securing hinge pin at left side of seat and retainer securing torque rod at right side of seat (see Figs. 9-103 and 9-105).
3. Carefully lift seat back assembly upward to disengage right end of torque rod from retaining slot in lock frame and from slot in lock support (Fig. 9-105); then remove seat back assembly.
4. Remove torque rod as follows:
 - a. Remove screws along bottom of seat back panel securing trim, foam pad and wire frame assembly to panel; then lift trim, foam pad and wire frame assembly upward to disengage from upper hanger brackets and remove assembly from seat back panel.
 - b. Remove torque rod retainer attaching bolts and bolt securing left end of torque rod (Fig. 9-104); then disengage split plastic sleeves (Fig. 9-104) from torque rod and remove torque rod.
5. To install torque rod and third seat back assembly, reverse removal procedure. Make sure split plastic sleeves are installed correctly on torque

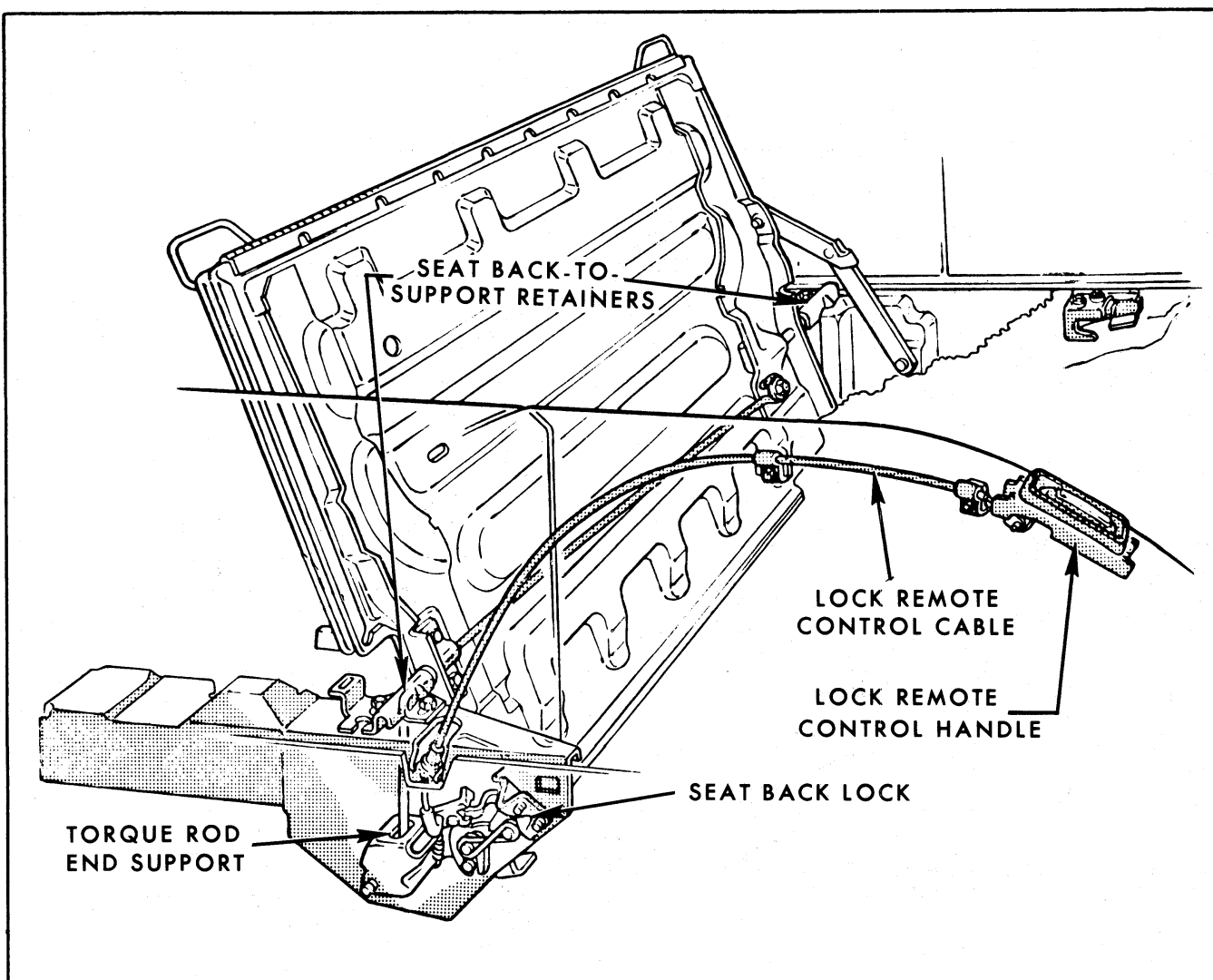


Fig. 9-103-Folding Third Seat Back Installation - "B" Body Three-Seat Station Wagons

rod as shown in Figure 9-104 and that when installing seat back torque rod, left end is engaged in slot in end support and lock striker is engaged with lock bolt (Figs. 9-103 and 9-105).

FOLDING THIRD SEAT BACK LOCK ASSEMBLY - "B" Body Three-Seat Station Wagons

Removal and Installation

1. Remove rear floor right side filler panel (see Fig. 9-88).
2. Remove lock finishing cover attaching screws,

disengage cover from retaining tabs and remove cover.

3. With seat back in "up" position remove lock attaching screws (Fig. 9-105).
4. Detach lock remote control cable from clip on lock lever (Fig. 9-105); then disengage lock from lock striker on seat back and from end of torque rod.
5. To install lock assembly, reverse removal procedure.

NOTE: If original cable end retaining clip on lock lever was damaged during removal, install new clip. Check for proper operation of seat back and lock.

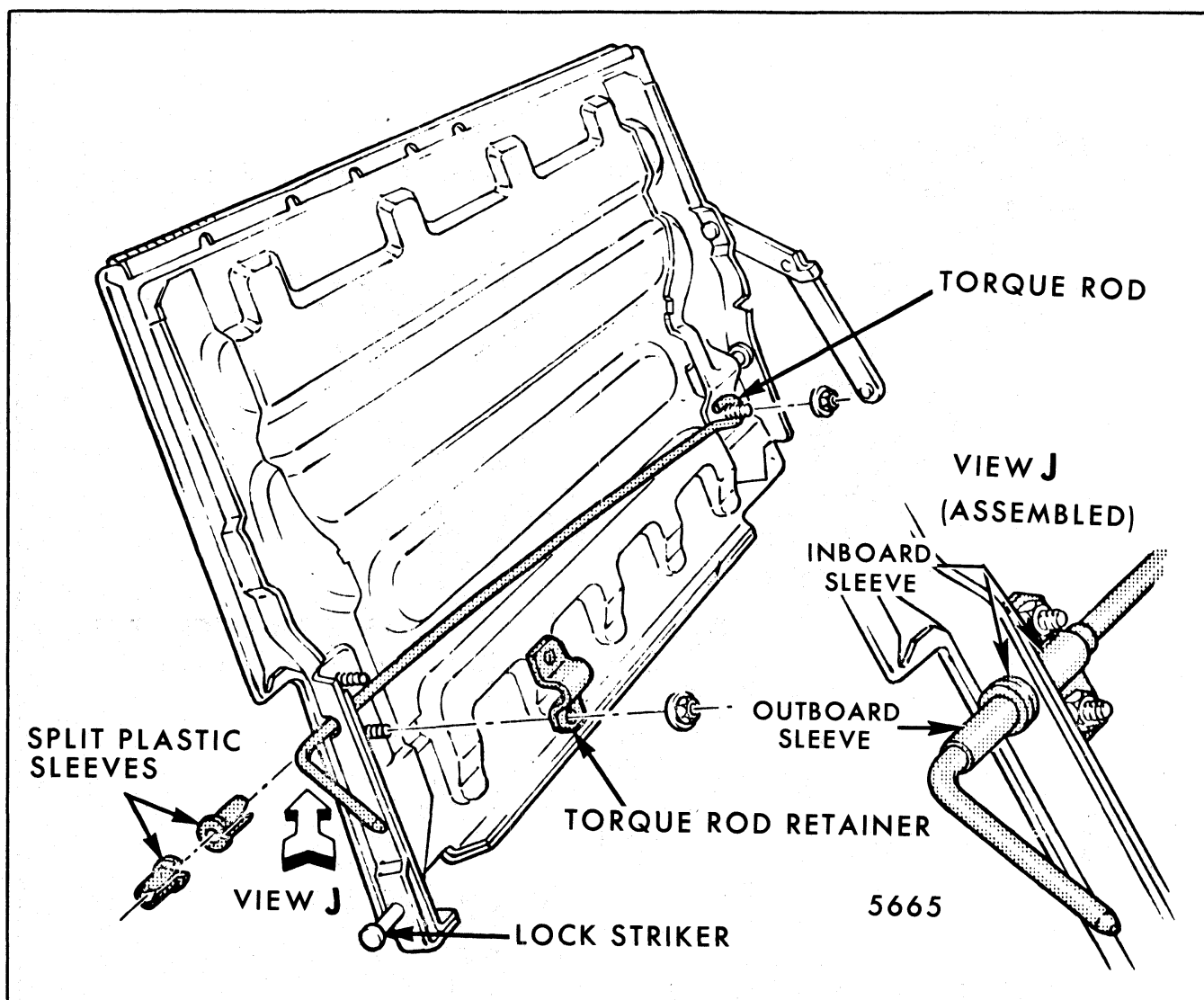


Fig. 9-104-Folding Third Seat Back Torque Rod Installation - "B" Body Three-Seat Station Wagons

THIRD SEAT BACK LOCK REMOTE CONTROL HANDLE ASSEMBLY AND/OR CONTROL CABLE - "B" Body Three-Seat Station Wagons

Removal and Installation

1. Remove right rear quarter trim panel as described in Section 6 under "Rear Quarter Trim Assembly - "B" Body Three-Seat Station Wagon Styles.
2. If removing lock remote control handle, remove anti-rotation clip screw and disengage end of cable from retaining clip on handle (Fig. 9-106).
3. Remove screws securing handle assembly and
 - retainer to quarter trim panel (Fig. 9-106) and remove handle assembly.
4. If removing lock remote control cable proceed as follows:
 - a. Remove cable retaining clip rearward to handle (see Fig. 9-103).
 - b. With seat back in "up" position and working through opening at rear of lock disengage (break if necessary) clip securing control cable to lock lever (Fig. 9-105) and detach cable from lock.
 - c. Carefully disengage cable plastic fitting (Fig. 9-105) from hole in lock support and remove cable assembly.

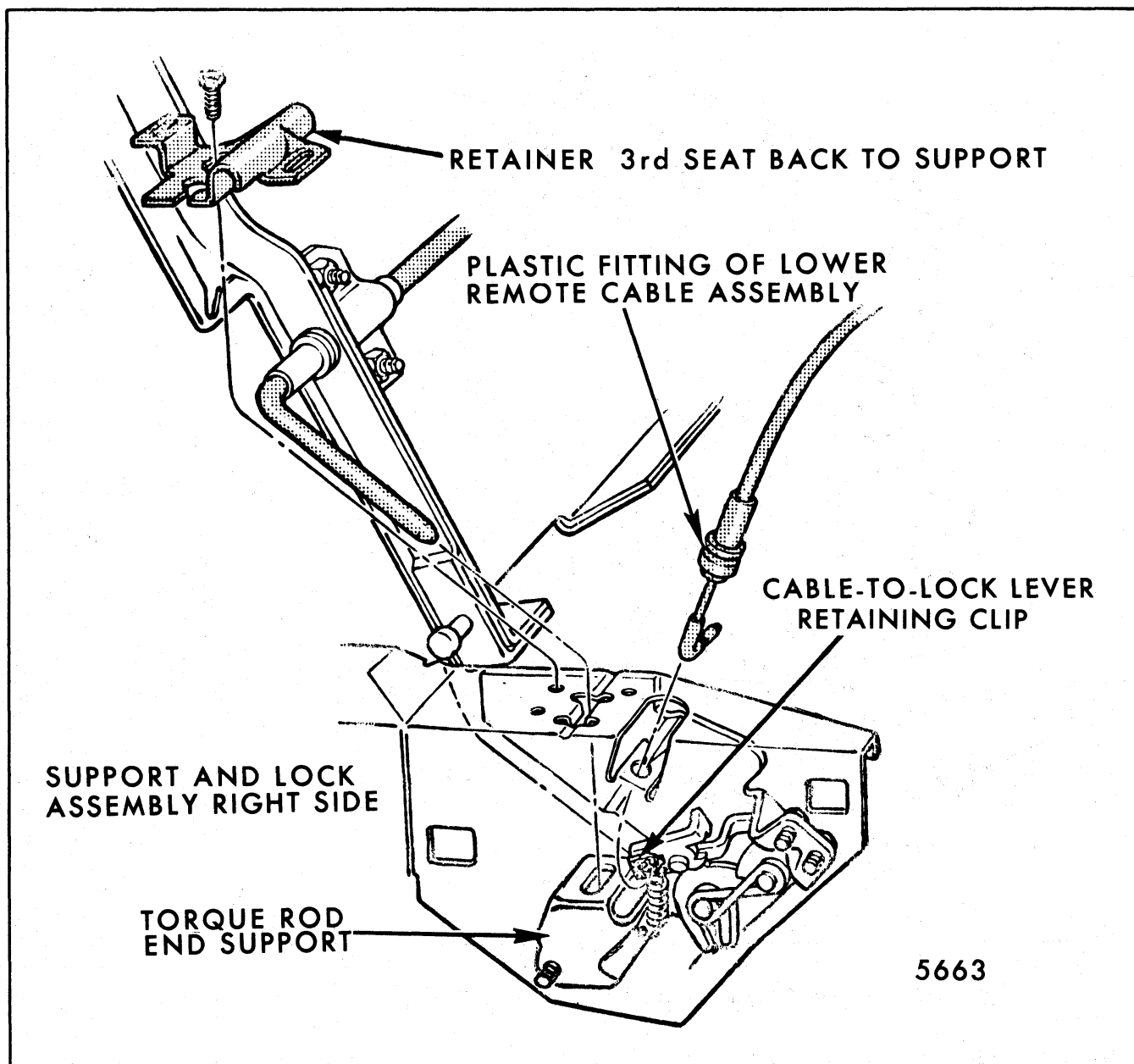


Fig. 9-105-Folding Third Seat Back Lock Assembly and Remote Cable Attachment at Lock - "B" Body Three-Seat Station Wagons

5. To install lock remote control cable and/or lock remote control handle assembly, reverse removal procedure.

NOTE: If original cable end retaining clip at handle or lock were damaged during removal, install new clip. Check for proper operation of seat back and lock.

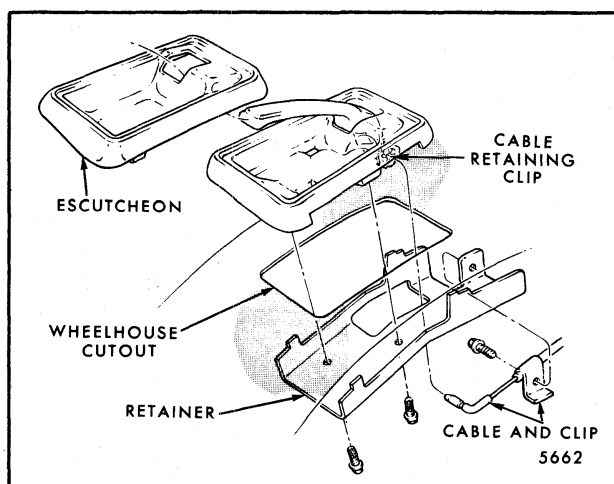


Fig. 9-106-Third Seat Back Lock Remote Control Handle Assembly

LAP AND SHOULDER BELTS - General Information - All Styles

Front seat belts incorporate a four to eight second "Fasten Seat Belt" reminder lamp and sound signal designed to remind the driver and/or passenger if their lap and shoulder belts are not fastened when the ignition is turned to the "on" position. The engine will start without seat belts buckled; however, a sound signal and reminder light will be activated for four to eight seconds and then turn off automatically. When the driver's seat belt is buckled, the buzzer will not operate; however, the "Fasten Seat Belt" reminder lamp will stay on for a four to eight second period.

The shoulder belt is attached to the front seat lap belt latch plate and connected to an inertia locking retractor installed to the roof or quarter inner panel above the right and left side of the front seat. The shoulder belt remains unlocked to allow occupants to move freely while the vehicle is being operated. When the vehicle decelerates or changes direction abruptly, the shoulder belt is locked in position by a pendulum or ball that causes a locking bar to engage a cog of the retractor mechanism.

SERVICING LAP AND SHOULDER BELTS

Before servicing or replacing lap and shoulder belts, refer to the following precautionary items:

1. Lap and shoulder belts will be serviced as follows:

- a. Retractor portion of front seat lap and shoulder belt for outboard passenger and driver.
 - b. Buckle portion of front seat lap belt for outboard passenger and driver.
 - c. All belts other than those mentioned in above steps a and b will be serviced in complete sets.
 - d. Do not intermix standard and deluxe belts on front or rear seats.
2. Keep sharp edges and damaging objects away from belts.
 3. Avoid bending or damaging any portion of the belt buckle or latch plate.
 4. Do not bleach or dye belt or strap webbing (clean with a mild soap solution and water).
 5. When installing lap or shoulder belt anchor bolt, start bolt by hand to assure that bolt is threaded straight.
 6. Do not attempt repairs on lap or shoulder belt retractor mechanisms or lap belt retractor covers. Replace defective assemblies with new service replacement parts.

CAUTION: Lap belt to floor pan and shoulder belt to roof panel or quarter panel fasteners are important attaching parts in that

they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.

7. Do not attempt to remove seat belt retractor cover. The cover and the long rivet securing the cover to the retractor are not available as service replacement parts.
8. Tighten lap belt anchor bolts to specified torque - 45 foot-pounds. Tighten shoulder belt anchor bolts - 12 to 18 foot-pounds.

NOTE: Specified 1/2 inch - 13 UNC thread-forming bolts must be used for all lap belt and shoulder belt floor pan anchorages. Shoulder belt roof rail anchorages use specified 5/16 inch - 18 UNC self-tapping bolts.

LAP BELTS AND SHOULDER BELTS

Removal and Installation

Refer to illustrations on following pages and select the appropriate illustration for removing and installing lap belts and shoulder belts.

CAUTION: *Lap belt to floor pan and shoulder belt to roof panel or quarter panel fasteners are important attaching parts in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.*

Check position of factory installed lap belt and shoulder belt anchors and reinstall anchor plates in same position. Care must be exercised when making installation that all anchor plates interlock as shown in illustrations.

To remove shoulder belt retractor cover, remove two attaching screws and disengage retaining strip from lugs at outboard side of cover.

To detach shoulder strap guide loop from escutcheon on head restraint or seat back, remove plastic fastener from the top of loop with removal tool J-21104

or equivalent and then insert a flat-bladed screwdriver between guide loop and escutcheon. Then push guide to side and turn screwdriver to snap guide from escutcheon (refer to "Shoulder Belt Guide Loop -Removal and Installation").

To check shoulder belt retractor for proper operation, remove retractor cover and insert a screwdriver or similar tool through bottom opening at rear of retractor housing. Push pendulum forward while pulling out on shoulder strap. If shoulder strap locks in position, retractor assembly is functioning properly (Fig. 9-117).

To remove center passenger lap belts from full width seat or buckle assemblies on bucket seats, remove screw-in sleeve plug; then remove anchor bolts from floor pan. On full width seat carefully pull anchor end of belt through lap belt protector. When installing belts, tighten anchor bolts to 45 foot-pounds and screw sleeve plug into position (Fig. 9-107). On two-door styles, it is important that seat belt webbing is routed over seat back outer hinge arm and not under arm.

On "A" styles (less swivel seat) with manual seat adjuster, remove front seat to floor pan attaching bolts to facilitate removal of seat belt retractor.

CAUTION: *Internal drive thread-forming anchor bolts are used to secure lap belts to the floor pan. To remove or install internal drive anchor bolts, use door lock striker and lap belt anchor bolt removal tool J-23457 or equivalent. Start bolt by hand to assure that bolt is threaded straight.*

On front seat belts where retractor anchor bolt is under retractor cover, carefully pry open retractor access hole cover at top and sides; then disconnect retractor switch at connector and remove anchor bolt.

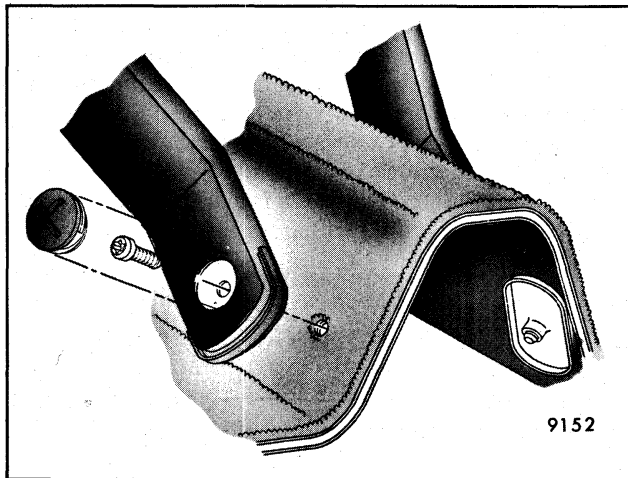
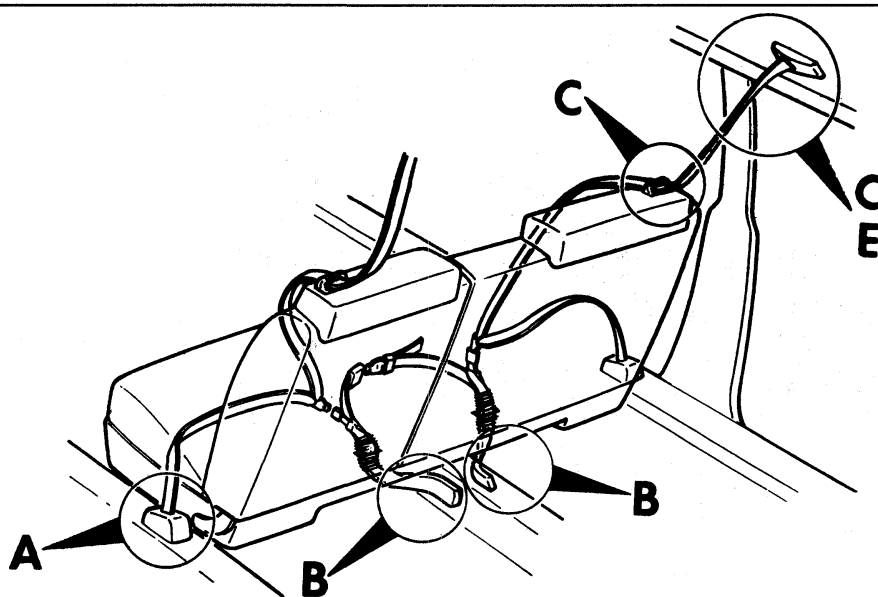


Fig. 9-107-"Screw-in Type" Seat Belt Sleeve Plug Installation

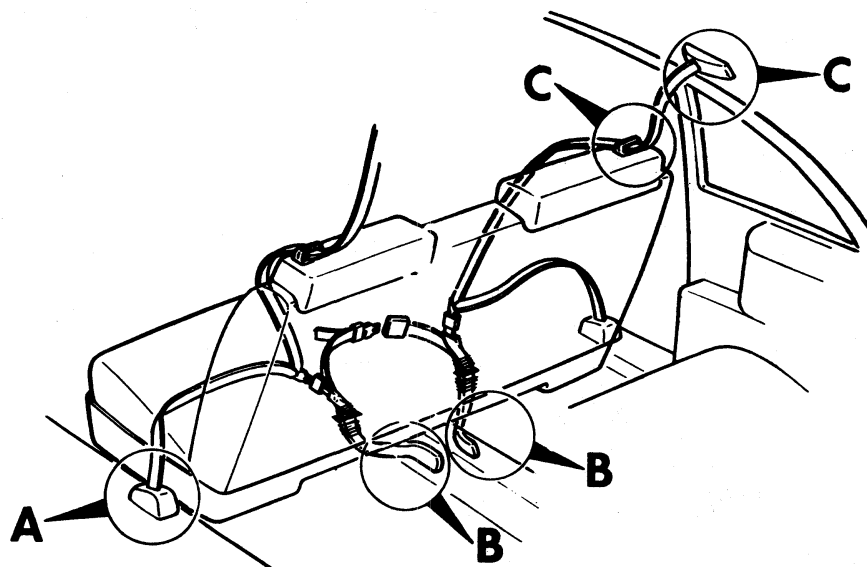


60—40 SEAT

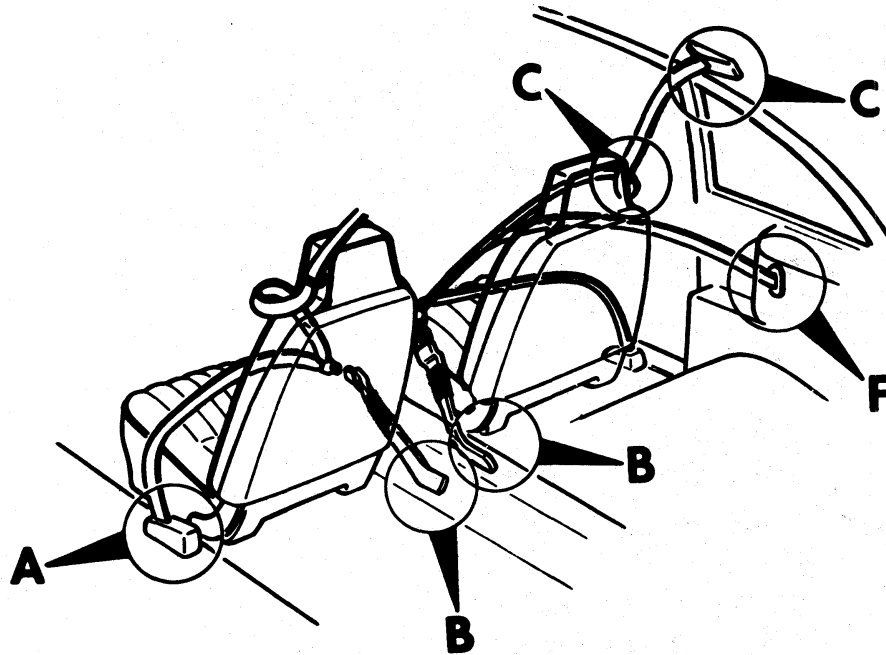
VIEW A - REF. FIGS. 9-111 AND 9-112

VIEW B - REF. FIG. 9-107

VIEWS C, AND E - REF. FIG. 9-115



BENCH SEAT

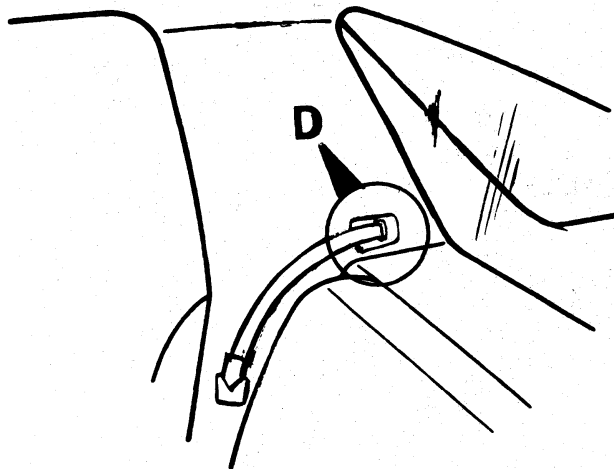


BUCKET SEATS

VIEW A - REF.FIG 9-111 AND 9-112

VIEW B - REF.FIG 9-114

VIEWS C,D AND F - REF.FIG.9-115



'A-80' STYLES

9165

Fig. 9-109-Front Seat Lap and Shoulder Belt Attaching Locations

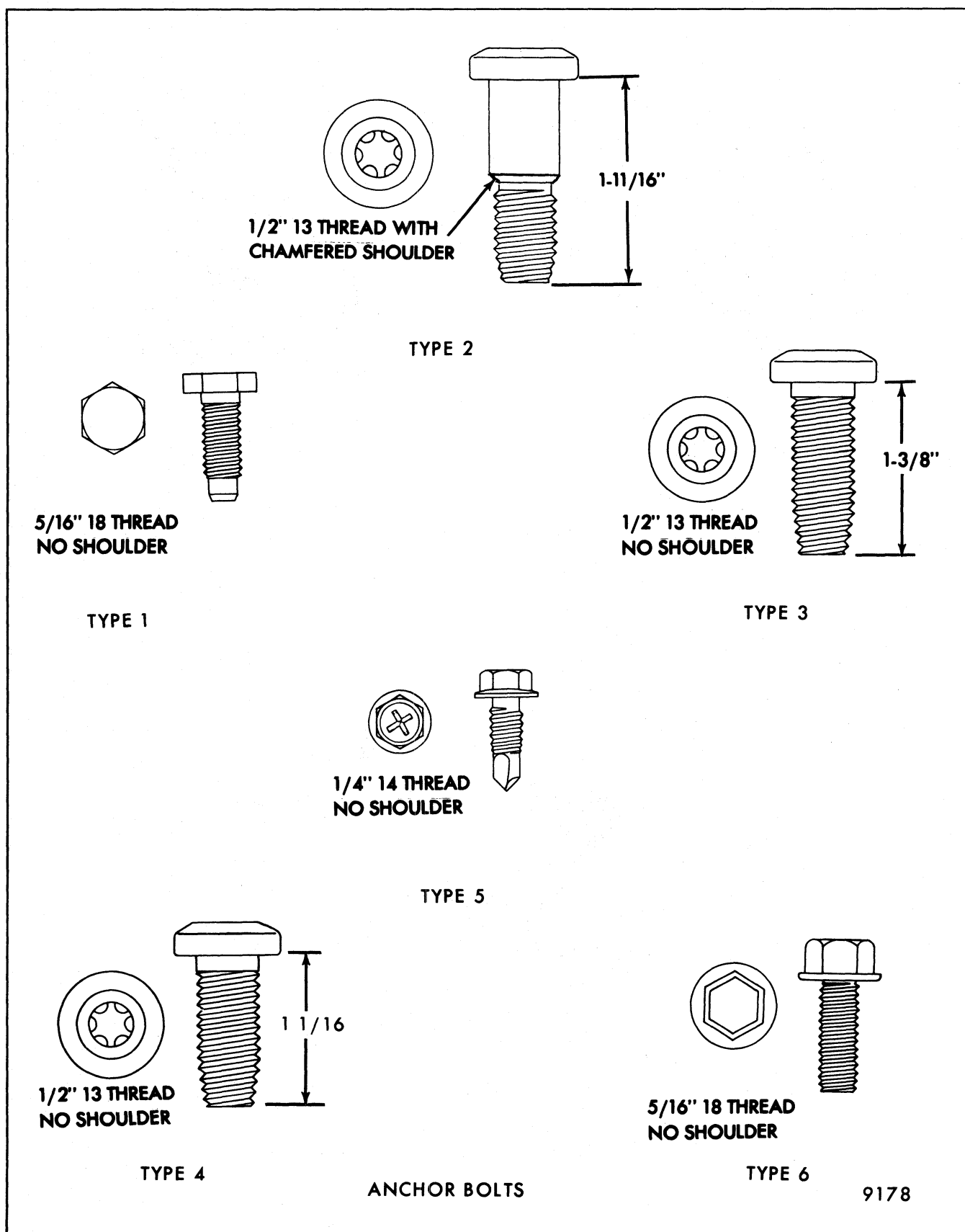
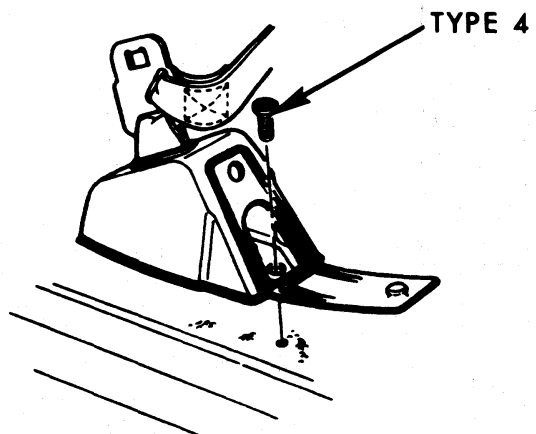
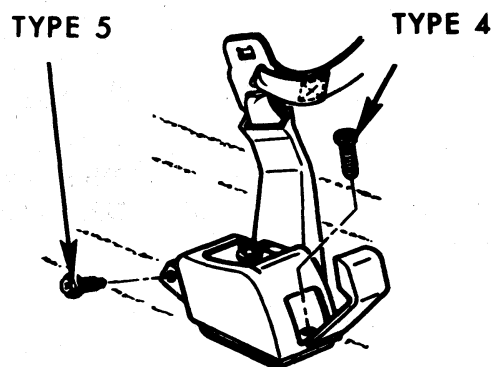


Fig. 9-110-Front Seat Lap and Shoulder Belt Anchor Bolts



"B-C-D-E" STYLES

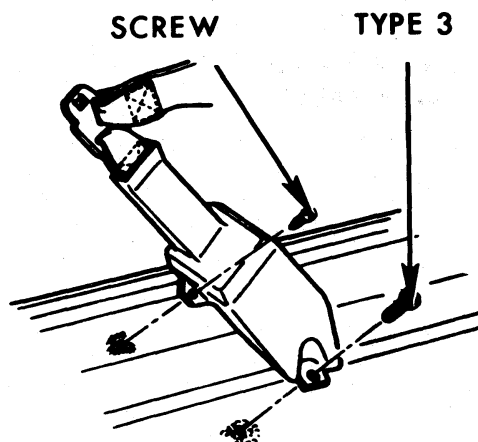
VIEW A



"A" STYLES

MANUAL SEAT

VIEW A

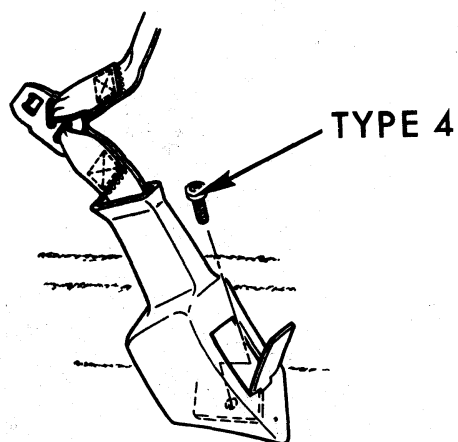


"H" STYLES

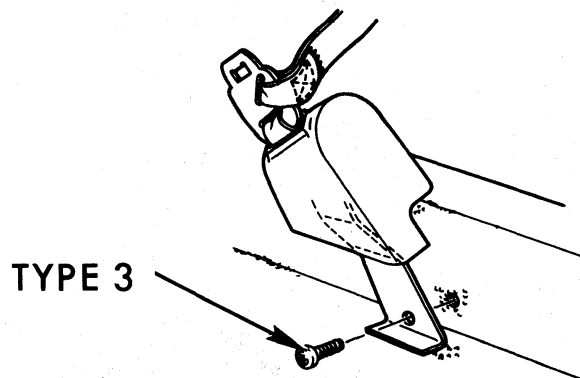
VIEW A

9166

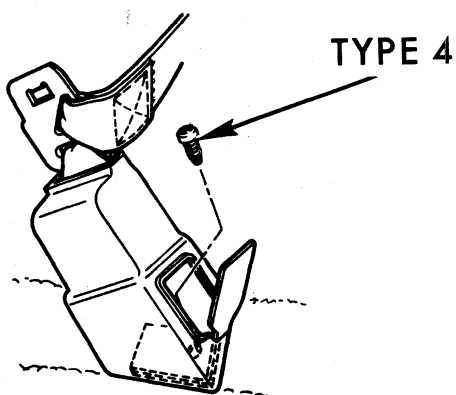
Fig. 9-111-Front Seat Outer Lap Belts and Retractors



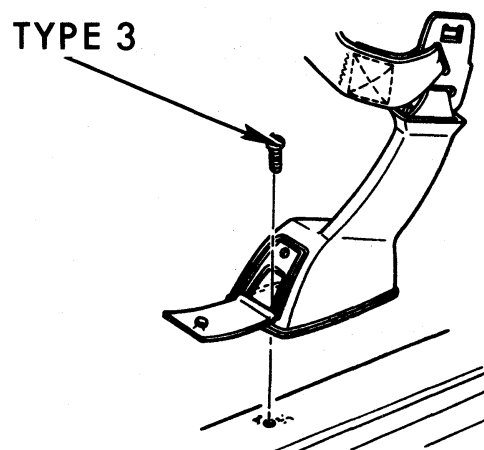
"A" STYLES
SIX-WAY POWER SEAT
VIEW A



"F" STYLES
VIEW A



"A" STYLES
SWIVEL SEAT
VIEW A



"X"-STYLES
VIEW A

5804

Fig. 9-112-Front Seat Outer Lap Belts and Retractors

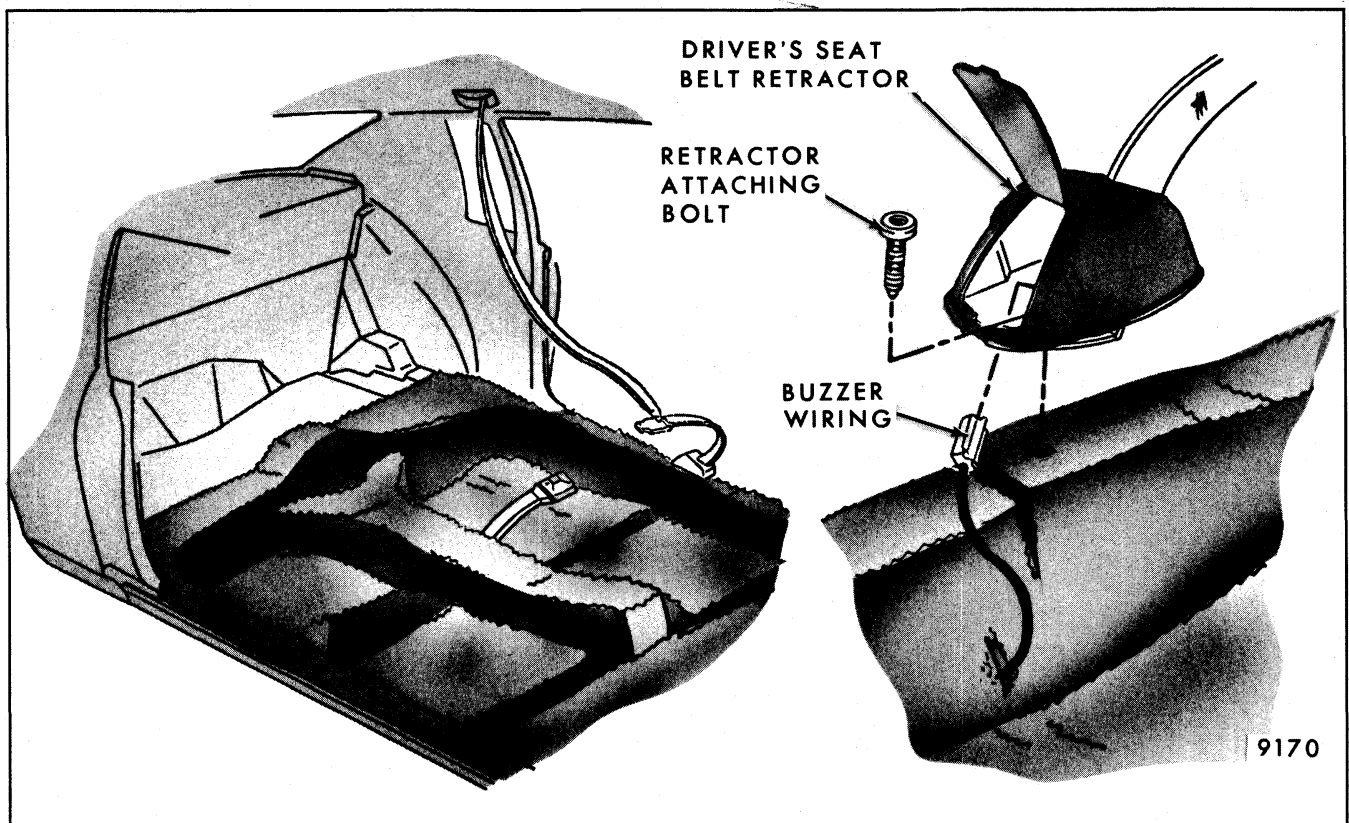
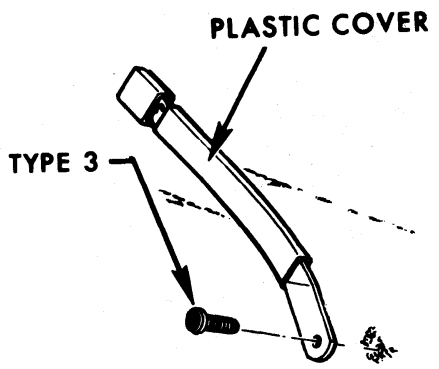
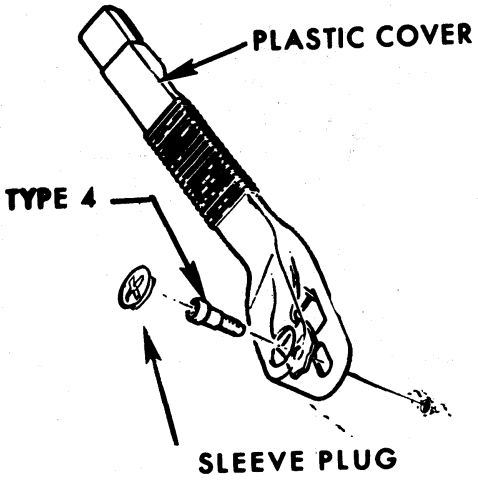
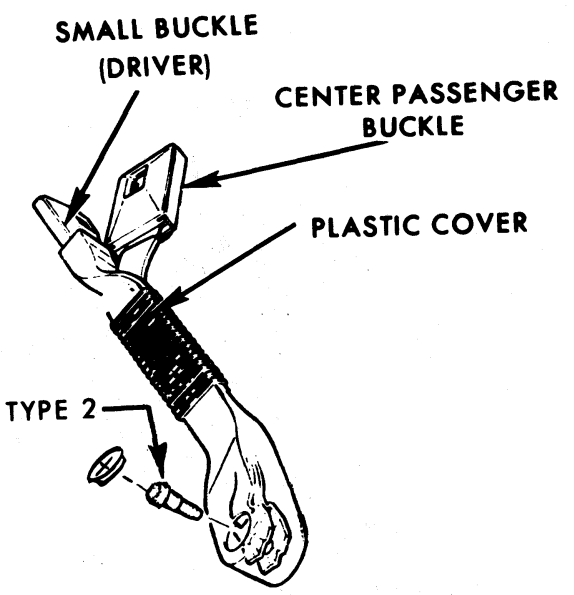
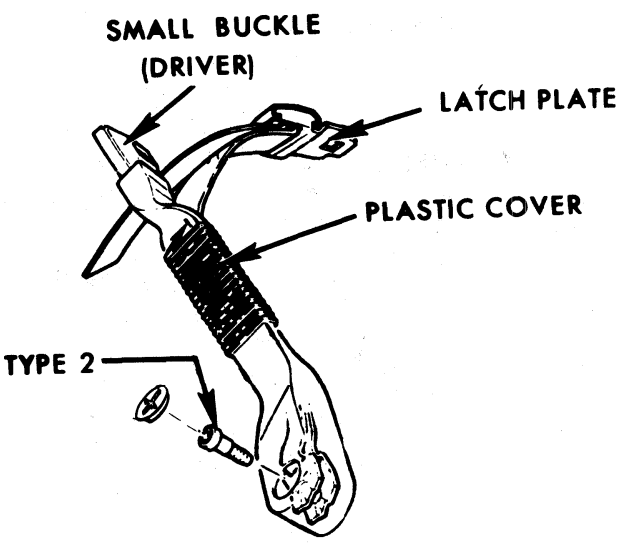


Fig. 9-113-Driver's Seat Belt Buzzer Wiring (Typical)



VIEW B

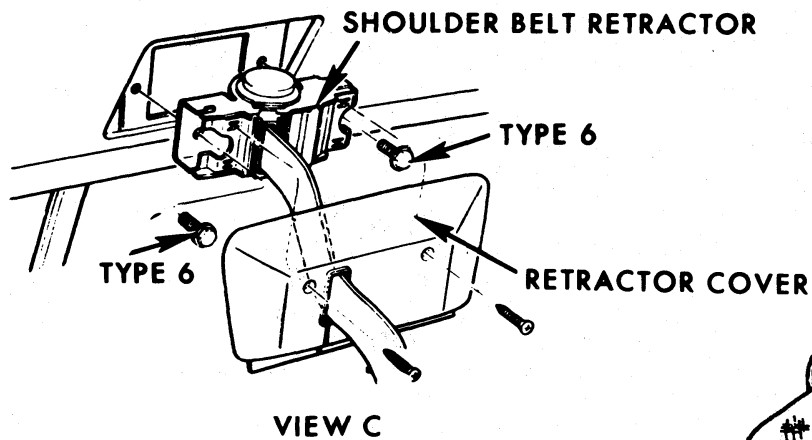
BUCKET SEAT



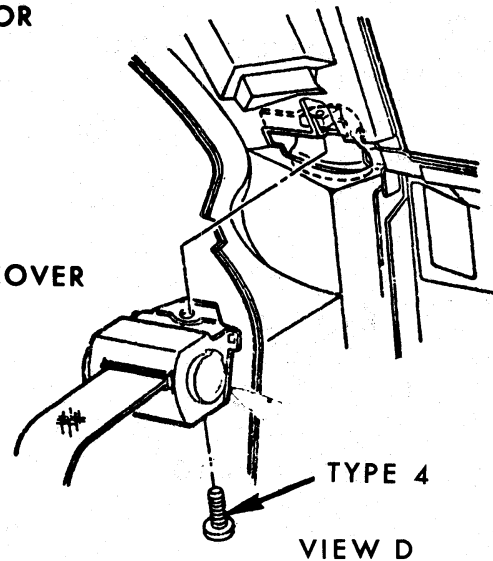
VIEW B

9167

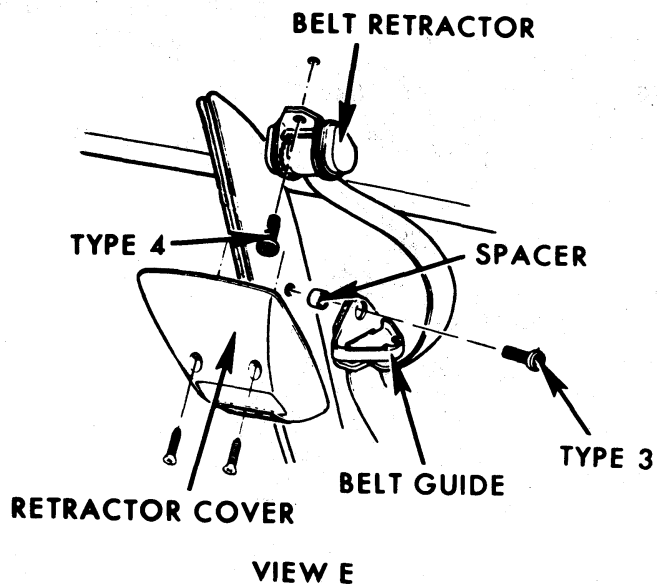
Fig. 9-114-Front Seat Inner Lap Belts



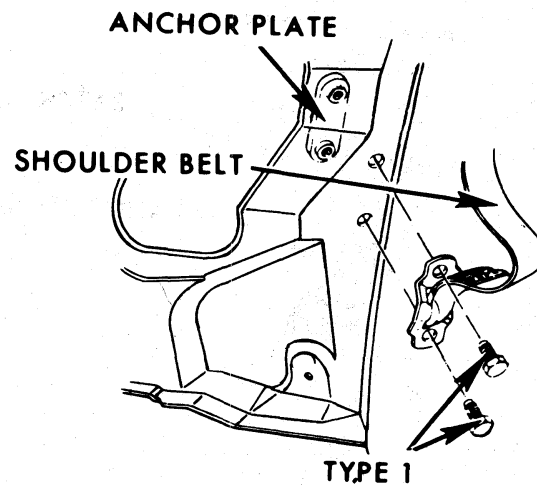
ALL STYLES LESS LIMOUSINE W/PARTITION,
SEDAN DELIVERY, PICK-UP DELIVERY
AND CONVERTIBLE



SEDAN AND PICK-UP DELIVERY



LIMOUSINE WITH CENTER PARTITION



VIEW F
CONVERTIBLE

9168

Fig. 9-115-Front Seat Shoulder Belts

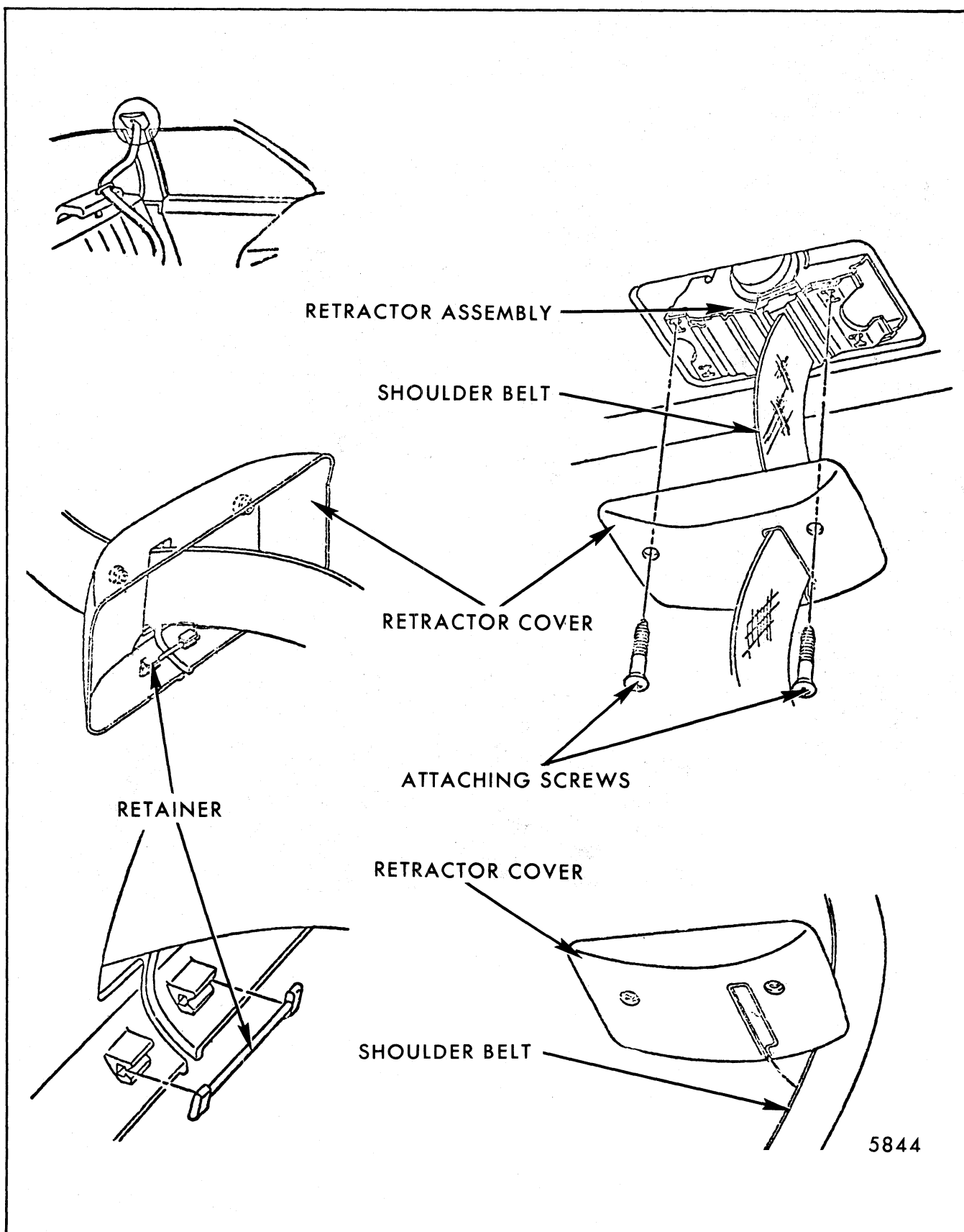


Fig. 9-116-Shoulder Belt Retractor Cover Removal

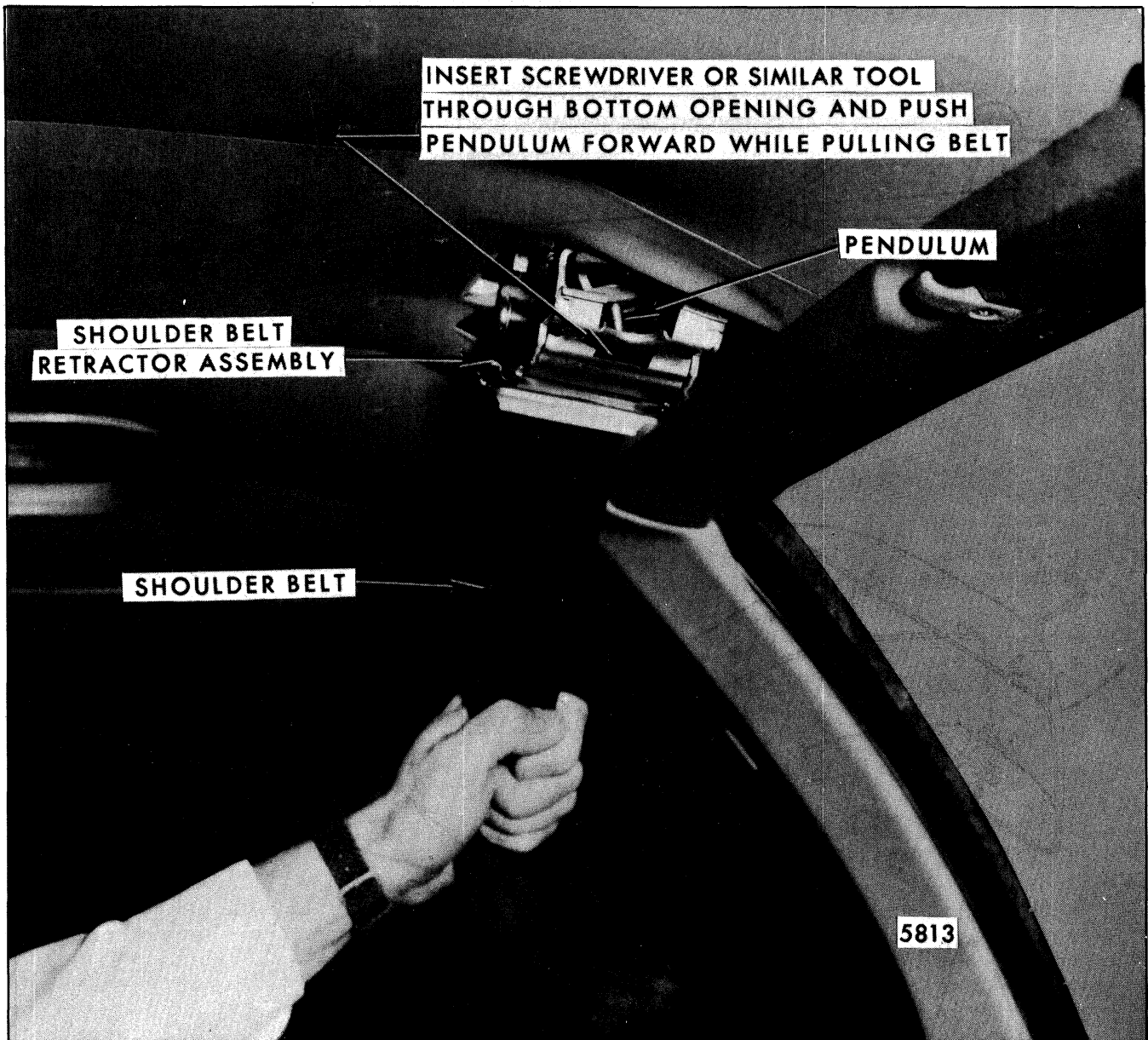
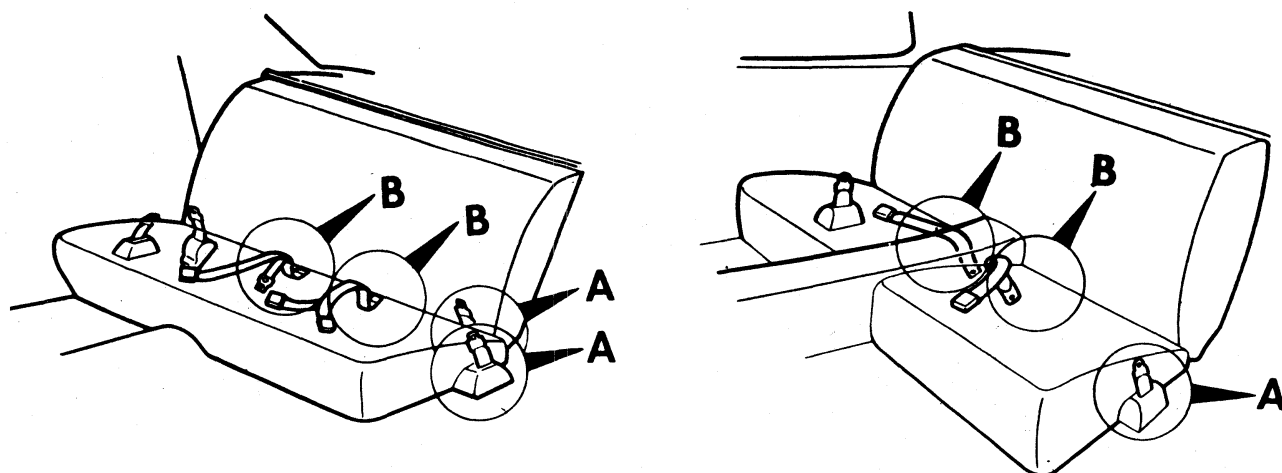


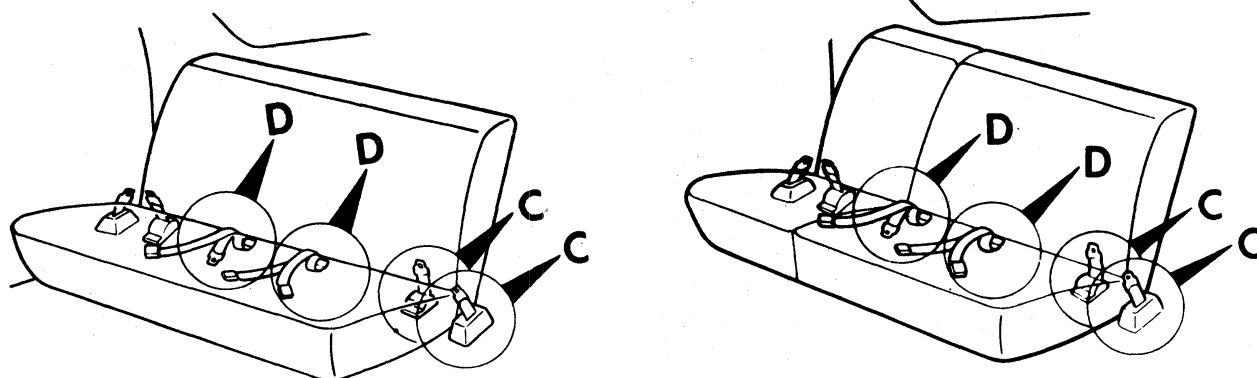
Fig. 9-117-Shoulder Belt Operation Check



REAR SEAT

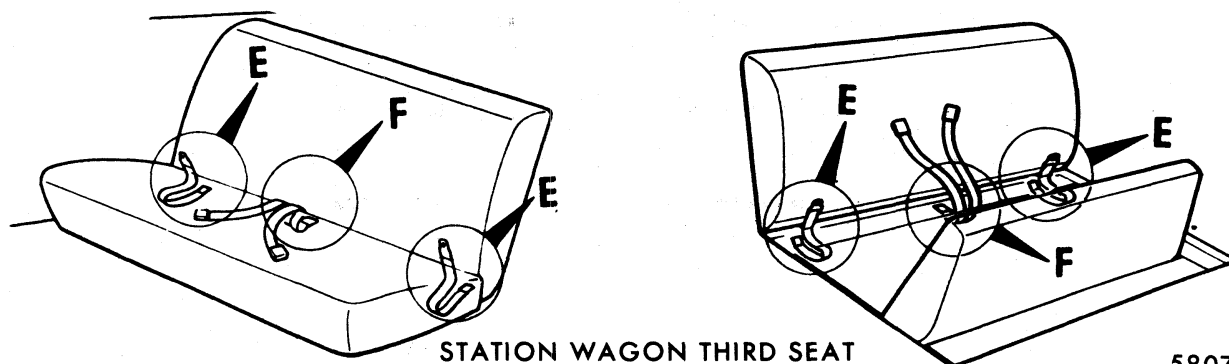
VIEW A - REF. FIG. 9-120

VIEW B - REF. FIG. 9-121



STATION WAGON SECOND SEAT

VIEWS C AND D - REF. FIG. 9-122

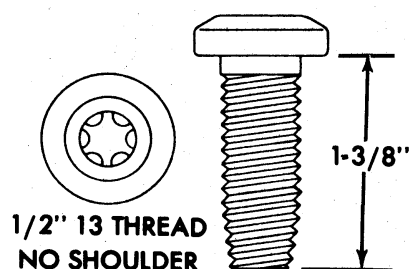


STATION WAGON THIRD SEAT

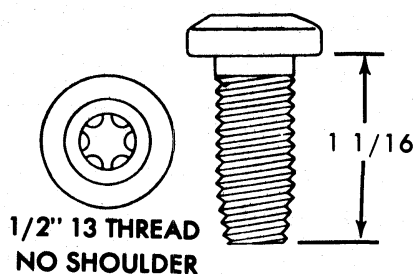
VIEWS E AND F - REF. FIG. 9-123

5807

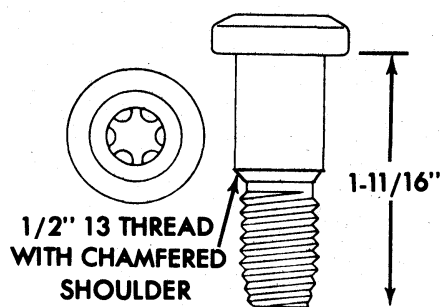
Fig. 9-118-Rear Seat Lap Belt Attaching Locations



TYPE 1



TYPE 2



TYPE 3

CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. TIGHTEN ALL ANCHOR BOLTS TO 20 TO 45 FT. LBS. TORQUE.

9177

Fig. 9-119-Rear Seat Lap Belt Anchor Bolts

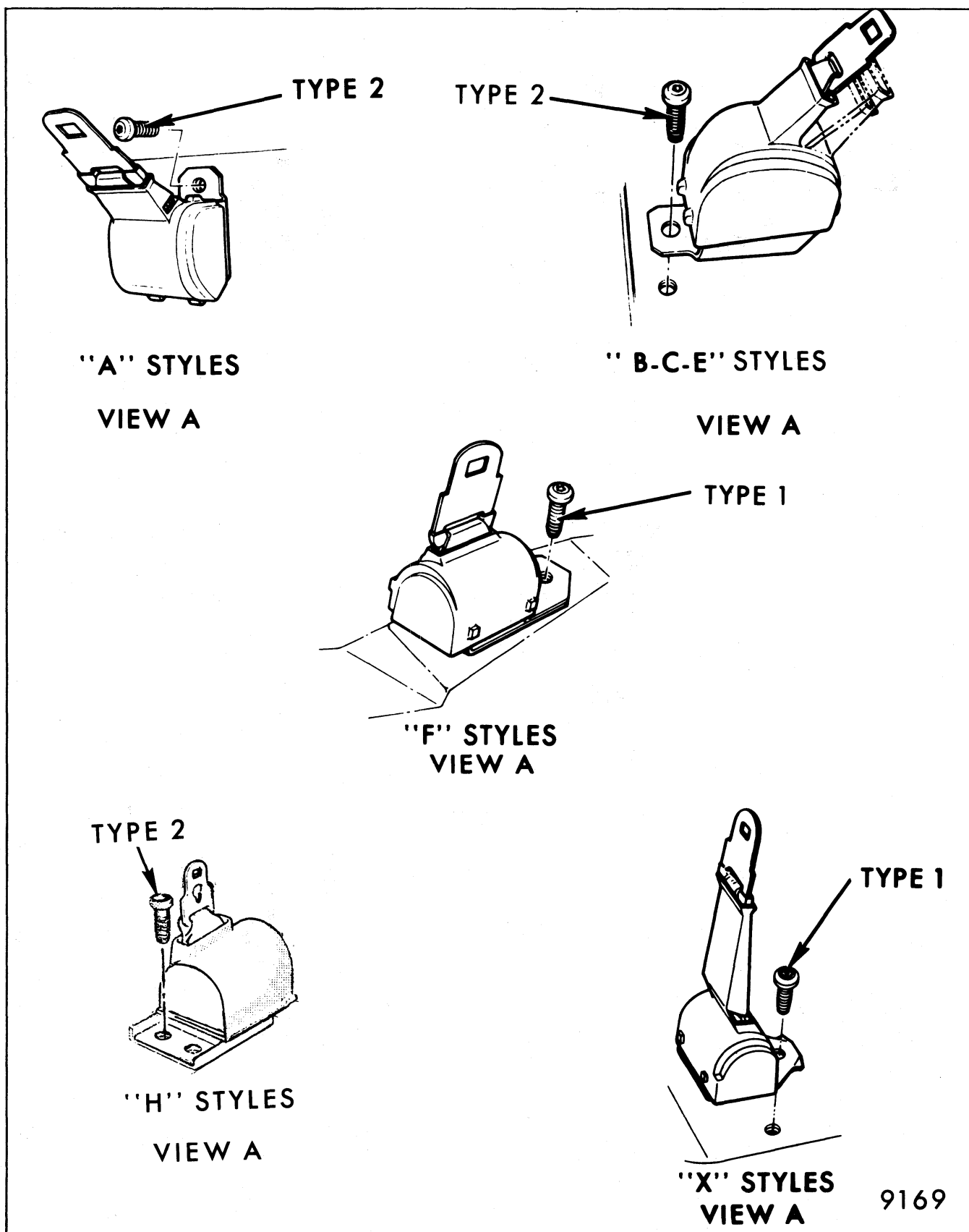
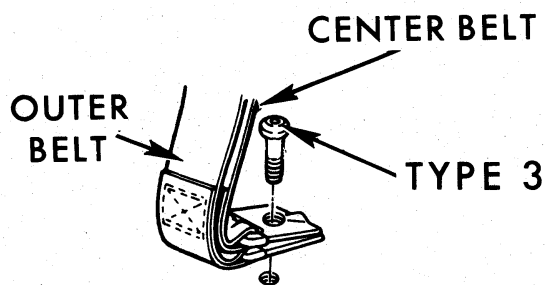
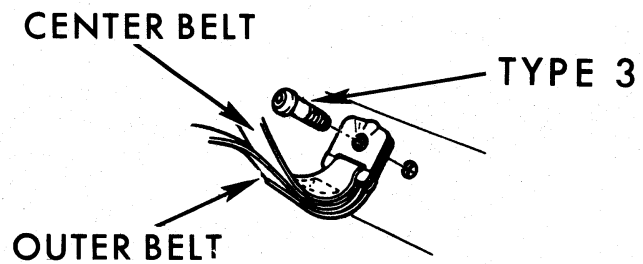


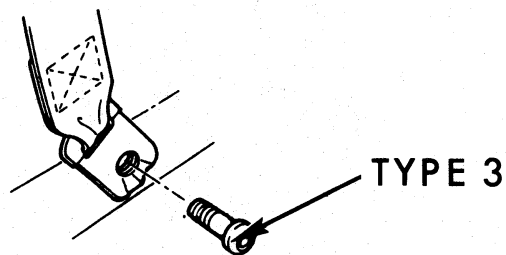
Fig. 9-120-Rear Seat Outer Lap Belt and Retractors



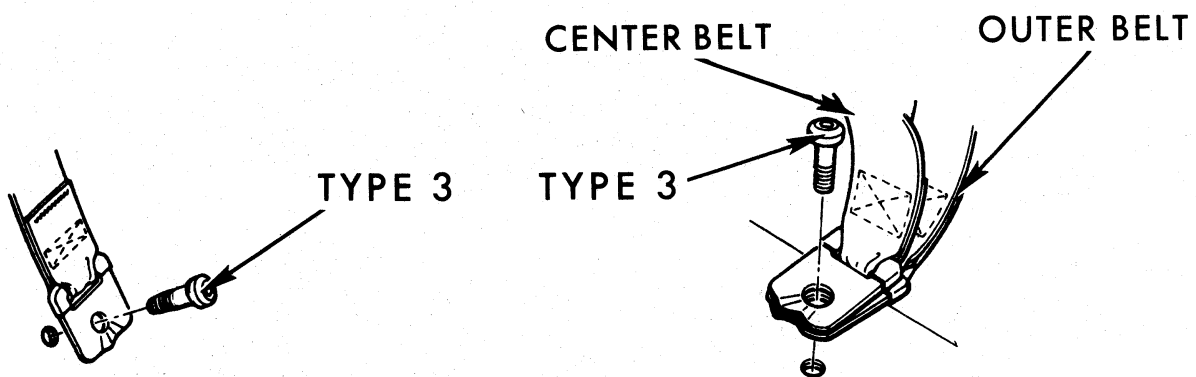
VIEW B



VIEW B



VIEW B

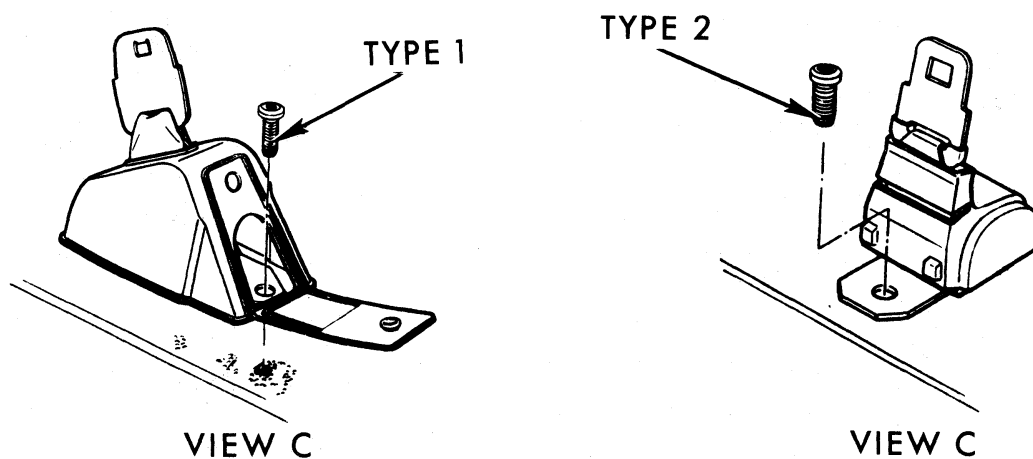


VIEW B

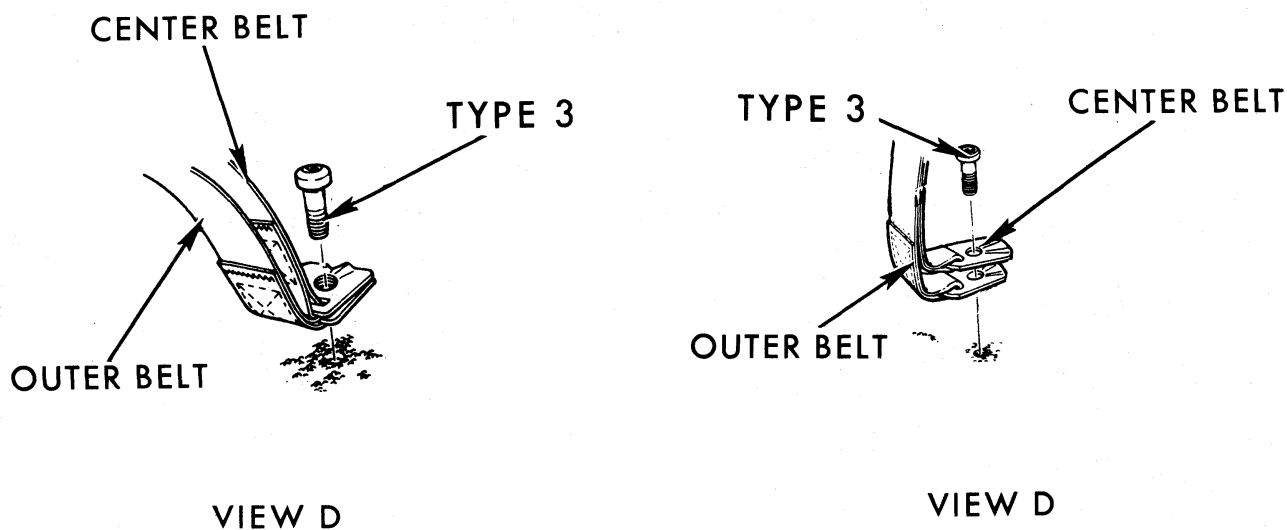
VIEW B

8232

Fig. 9-121-Rear Seat Inner Lap Belts



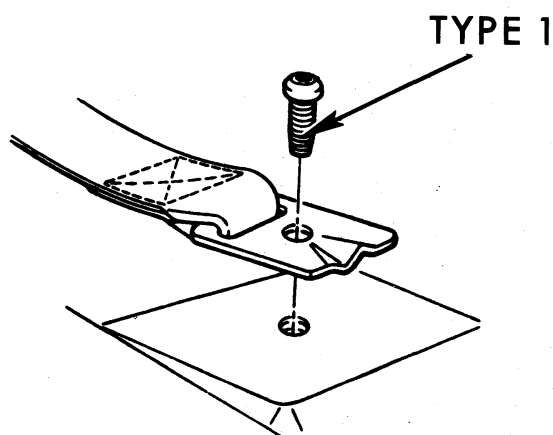
STATION WAGON SECOND SEAT-OUTER



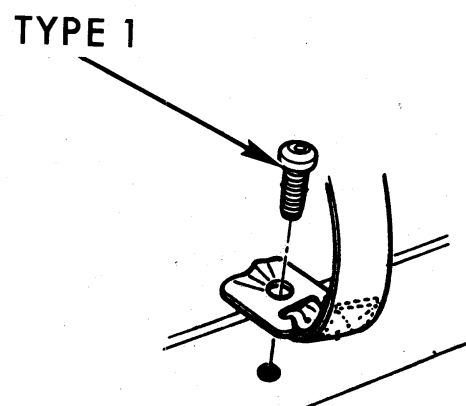
STATION WAGON SECOND SEAT - INNER

8233

Fig. 9-122-Station Wagon Second Seat Outer and Inner Lap Belts and Retractors



VIEW E

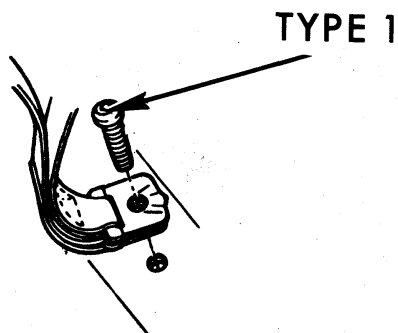


VIEW E

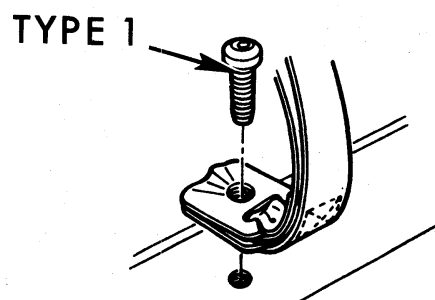
STATION WAGON THIRD SEAT - OUTER

CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. TIGHTEN ALL FLOOR ANCHOR BOLTS TO 20 TO 45 FT. LBS. TORQUE.



VIEW F

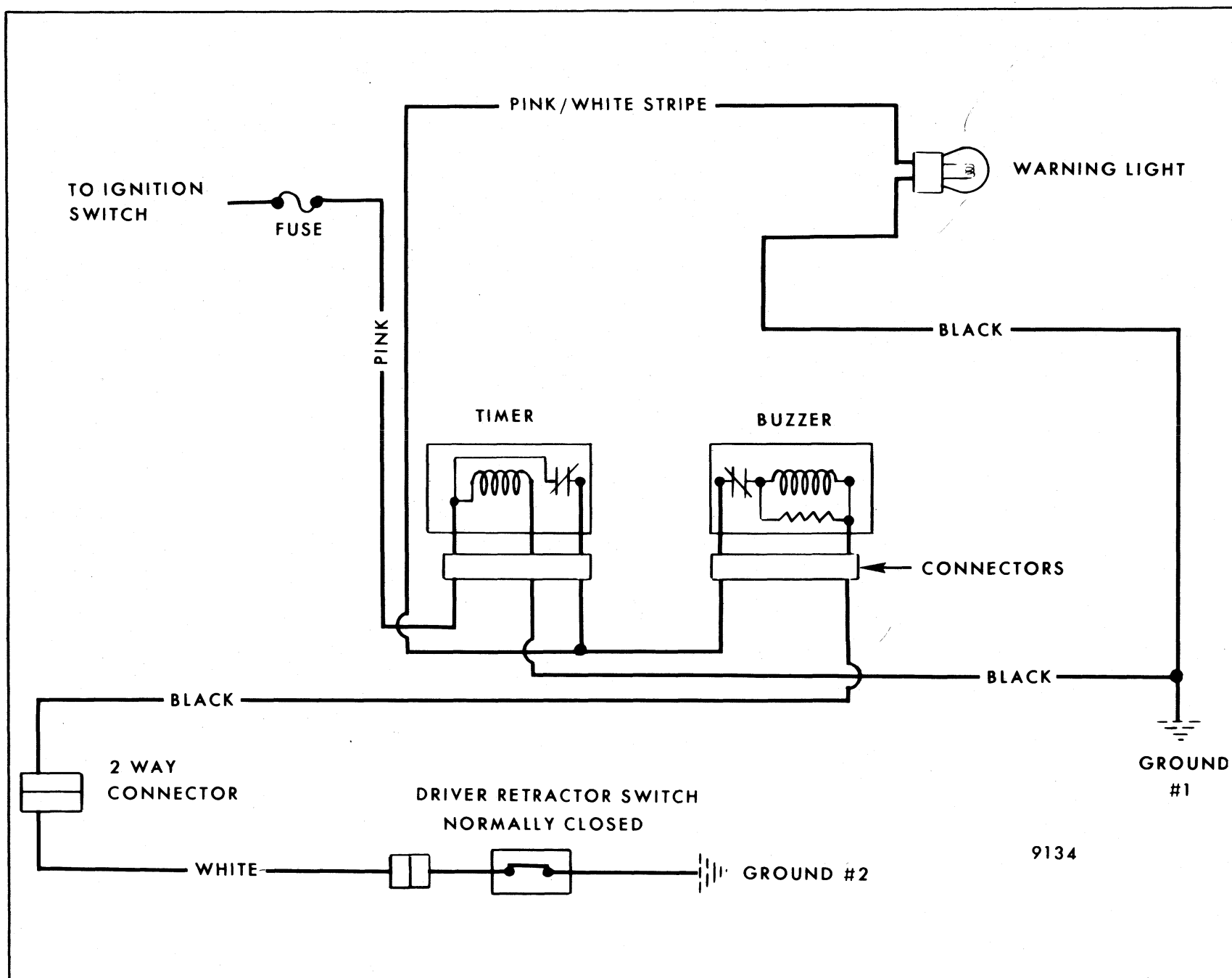


VIEW F

STATION WAGON THIRD SEAT - INNER

5812

Fig. 9-124-Seat Belt Body Harness Schematic All Styles Except "H" Styles



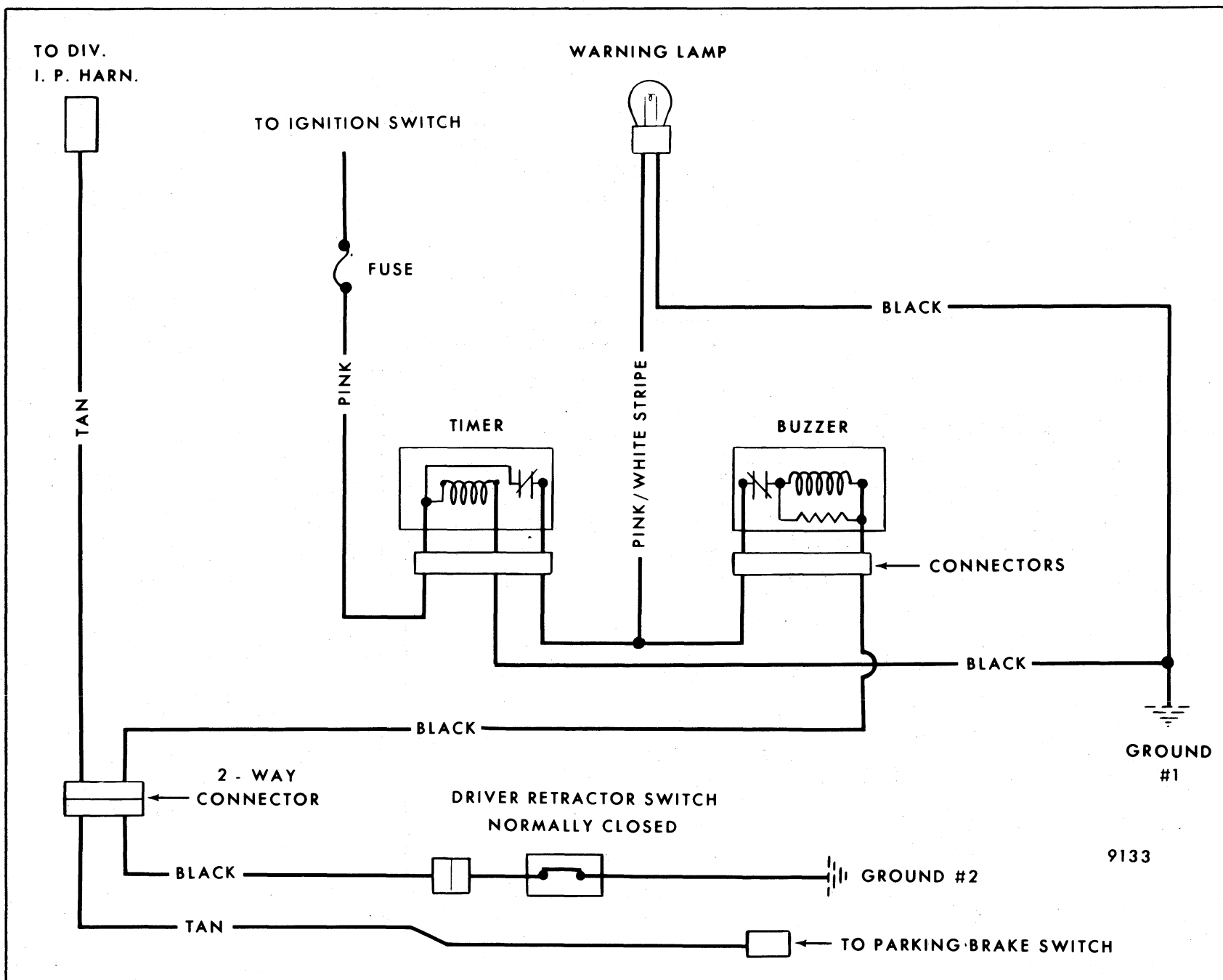
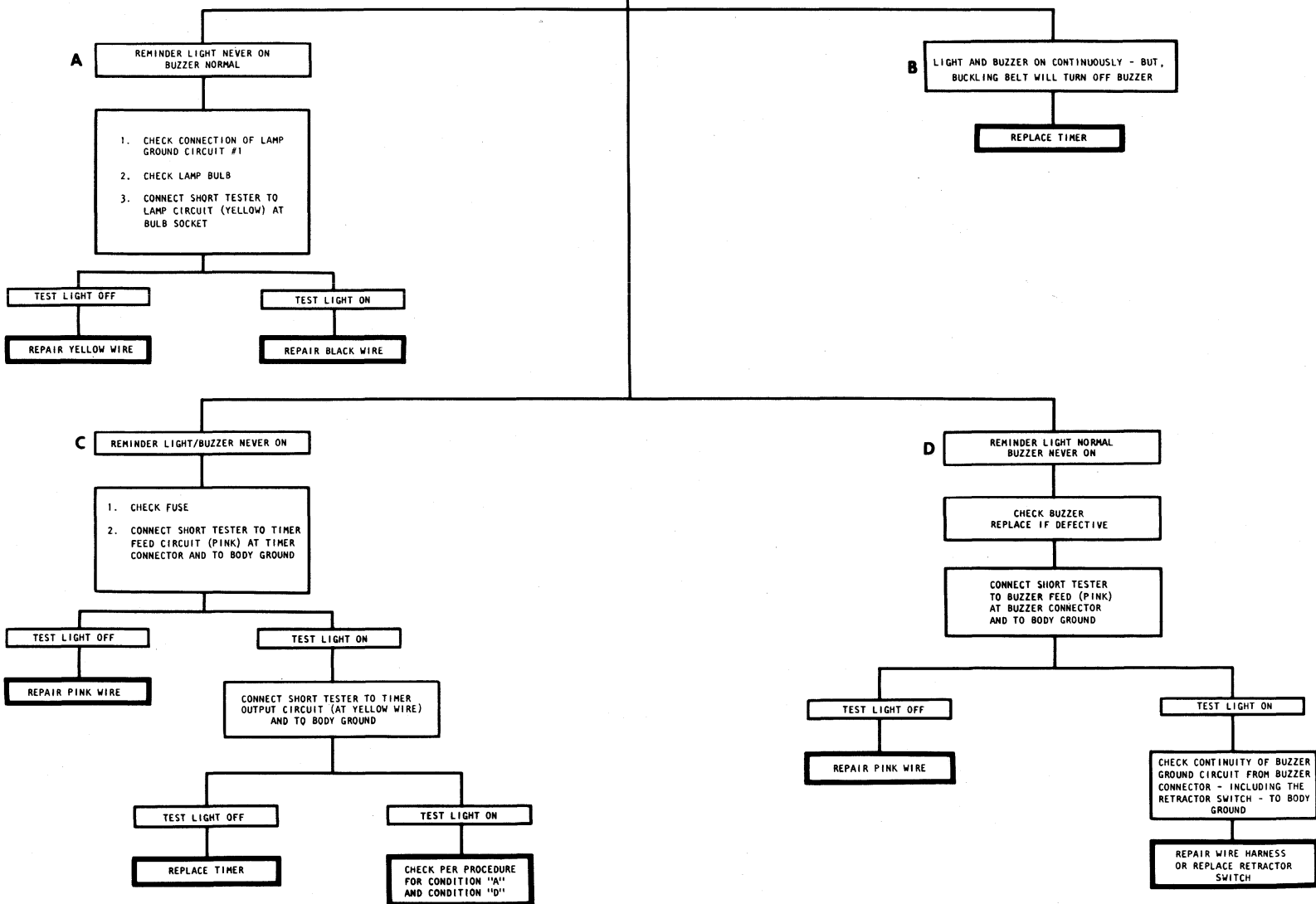


Fig. 9-125-Seat Belt Body Harness Schematic - All "H" Styles

SEAT BELT REMINDER LIGHT / BUZZER DIAGNOSIS

NOTE: WHEN DIAGNOSING A WARNING SYSTEM FAILURE AND THE SYSTEM AUTOMATICALLY SHUTS OFF BECAUSE OF THE 4-8 SECOND TIMER, A MINIMUM OF 3 MINUTES MUST BE ALLOWED BETWEEN THE DIAGNOSTIC STEPS TO ALLOW THE TIMER TO RESET (KEY IN OFF POSITION DURING THIS PERIOD).



9135

Fig. 9-126-Seat Belt Reminder Light/Buzzer Diagnosis Chart

SECTION 10

ELECTRICAL

INDEX

SUBJECT	PAGE	SUBJECT	PAGE
Introduction	10-1	Power Operated Sun Roof.....	10-32
General Checking and Body Wiring		Exterior and Interior Lamps	10-35
Repair Procedures	10-4	Power Door Locks	10-42
Power Windows	10-7	Theft Deterrent System	10-65
Power Operated Tailgate Window		Electric Seat Back Lock Release.....	10-69
and Tailgate	10-17	Electric Back Window Grid Defogger	10-70
Power Seats.....	10-20	Back Window Defogger-Blower Type.....	10-75

INTRODUCTION

The body electrical equipment for all body styles is covered in the following sections:

- A. General Checking Procedures
- B. Power Windows
- C. Power Tailgate Window and Tailgate
- D. Power Seat
- E. Exterior and Interior Lamps
- F. Electric Door Locks
- G. Electric Seat Back Lock Release
- H. Electric Back Window Grid Defogger
- I. Back Window Defogger (Blower Type)

Typical body wiring diagrams are located at the end of this section. The Wire Identification Chart (Fig. 10-4) is applicable for all wiring diagrams unless otherwise specified.

Circuit wiring for power equipment is protected by a fuse panel mounted "plug-in" type protective circuit breaker.

The front body harness incorporates a "harmonica" type connector at the front (Fig. 10-1) and a "block" type connector at the rear (Fig. 10-2), except on the "H" body which uses "harmonica" type connectors

both fore and aft. All connectors have a positive locking self-ejecting feature which provides positive locking when properly engaged or ejects if it is not fully engaged. To facilitate disengagement of the connectors, use tool J-24388 or equivalent (Fig. 10-5).

All wires crossing the body beneath the instrument panel are enclosed in a one-piece plastic cross body harness conduit, which is secured to the center duct panel with clips (Fig. 10-3).

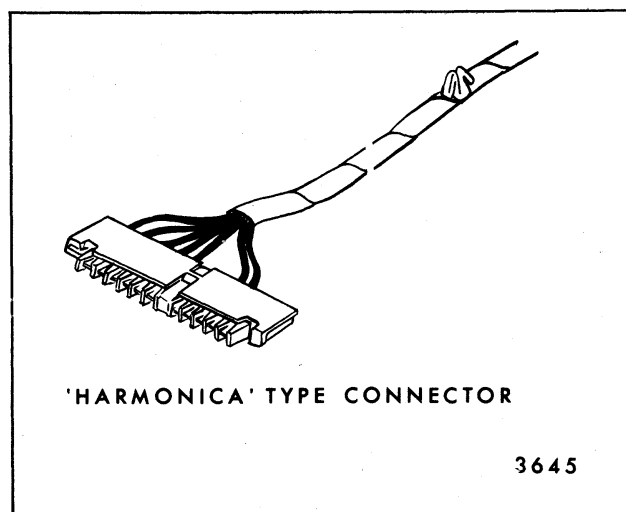


Fig. 10-1-Front Body Harness - Forward Connector and Aft Connector on "H" Styles

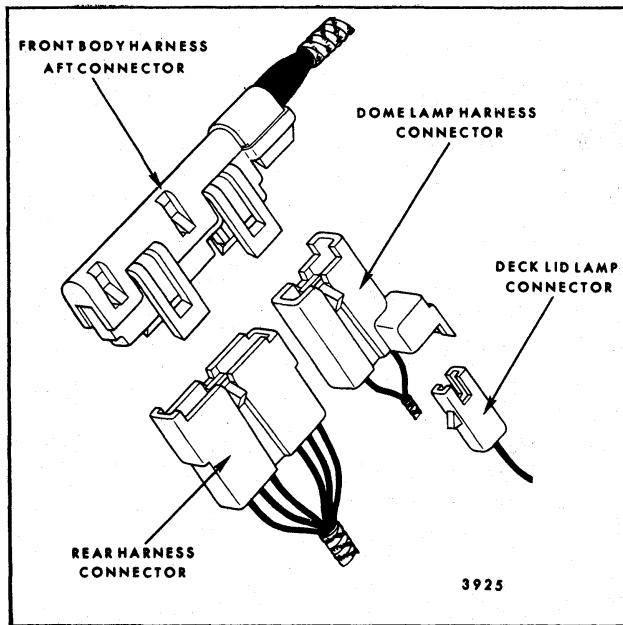


Fig. 10-2-Front Body Harness - Aft Connector - "F" Style
Shown

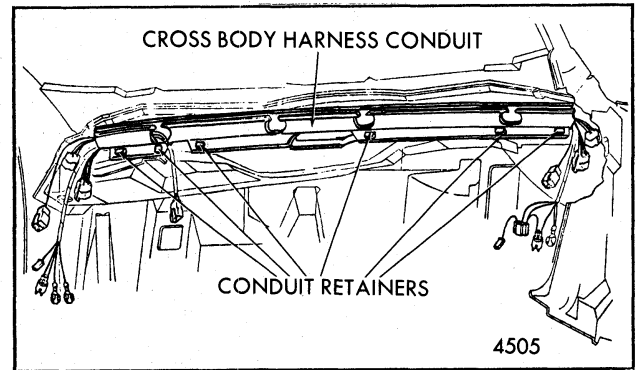


Fig. 10-3-Cross Body Harness Conduit

DOOR JAMB SWITCHES

Door jamb switch assemblies consist of a plunger, plunger collar, threaded retainer and terminals. They are installed in the front and/or rear door hinge pillars. When the door of the vehicle is closed the plunger is depressed which creates an open in the ground circuit. When the door is opened the plunger is released and completes the circuit to ground (Fig. 10-6).

Fig. 10-4-Wire Identification Chart

CIRCUIT No.	COLOR	CODE	DESCRIPTION	CIRCUIT No.	COLOR	CODE	DESCRIPTION
2	Red	RED	Feed-Battery Unfused	180	Light Green	LGT GRN	Power Seat - 6-Way - Solenoid - Front Up & Down
9	Brown	BRN	Tail, License and Marker Lamp	181	Light Blue	LGT BLU	Power Seat - Solenoid Fore & Aft
18	Yellow	YEL	Stop/Direction Lamp Rear L.H.	182	Yellow	YEL	Power Seat - 6-Way - Aft & Down
19	Dark Green	DRK GRN	Stop/Direction Lamp Rear R.H.	183	Light Blue	LGT BLU	Tailgate or Center Partition Window - Up
20	Red	RED	Stop Lamp Trailer	184	Tan/White	TAN/WHT	Tailgate or Center Partition Window - Down
22	White	WHT	Ground Direct-Trailer	185	Tan	TAN	Vent Control - L.R. - Open
24	Light Green	LGT GRN	Back Up Lamp	186	Gray	GRA	Vent Control - L.R. - Close
30	Light Tan	LGT TAN	Fuel Gauge to Tank Unit	187	Tan/Black	TAN/BLK	Vent Control - R.R. - Open
32	Yellow	YEL	Feed Mirror Lamp/Map Light	188	Gray/Black	GRA/BLK	Vent Control - R.R. - Close
39	Pink/Black	PNK/BLK	Feed-Ign. Sw. "ON" Controlled-Feed	189	Dark Green	DRK GRN	Power Seat - 4-Way - Fore & Down
40	Orange	ORN	Feed-Battery-Fused	190	Yellow	YEL	Power Seat - 4-Way - Aft & Down
41	Brown/White	BRN/WHT	Feed-Ign Sw Acary Controlled-Fused	191	Light Green	LGT GRN	Power Seat - 4-Way Solenoid - Up & Down
43	Yellow	YEL	Radio Feed	192	Purple	PPL	Defogger - Hi or Single Speed
44	Dark Green	DRK GRN	I.P. & Lights Feed (Usually Light Sw to Fuse)	193	White/Purple	WHT/PPL	Defogger - Low Speed - 0.38 ohms per foot
45	Black	BLK	Marker & Clearance Lamps (Trailers - ICC Req.)	194	Black	BLK	Electric Door Lock - Unlock
46	Dark Blue	DRK BLU	Rear Seat Spkr Feed (Single Radio or Right Stereo)	195	Dark Green/Yellow	DRK GRN/YEL	Electric Door Lock - Lock
47	Dark Blue	DRK BLU	Aux Circuit (Trailer)	199	Brown	BRN	Rear Seat Spkr - Feed from Radio Left Stereo
60	Orange/Black	ORN/BLK	Feed-Battery - Circuit Breaker Protected	200	Light Green	LGT GRN	Front Spkr - Feed from Radio - Single or Right Stereo
91	Black	BLK	Windshield Wiper - Low	201	Tan	TAN	Front Spkr - Feed from Radio - Left Stereo
92	Light Blue	LGT BLU	Windshield Wiper - High	207	Yellow/Black	YEL/BLK	Seat Sensor Ground
93	Yellow	YEL	Windshield Wiper - Motor Feed	208	Black	BLK	Switch Controlled Grd (T.C.S.)
94	Dark Blue	DRK BLU	Windshield Wiper Switch to Washer	210	White	WHT	Power Seat - 6-Way - Fore & Down
125	Yellow	YEL	Door Jamb Switch	211	Dark Blue	DRK BLU	Power Seat - 6-Way - Aft & Up
126	Black	BLK	Seat Back Lock	220	Yellow	YEL	Lp Feed
140	Orange	ORN	Feed Battery - Fused	238	Black	BLK	Seat Belt Warning System Buzzer Ground to Belt Assembly Sw
150	Black	BLK	Ground Circuit - Direct	239	Pink/Black	PNK/BLK	Feed, Ign Switch, "ON" Controlled - Fused
151	Ylk or Blk-Wht Str	BLK or BLK-WHT-STR	Ground Circuit - Direct	240	Orange	ORN	Feed Battery - Fused
152	Black	BLK	Ground Circuit - Direct	243	Black/White	BLK/WHT	Feed, Drive Selector Switch Controlled
153	Black	BLK	Ground Circuit - Direct	244	Purple	PPL	Feed Lt F/D Sol Relay Controlled
154	Black	BLK	Ground Circuit - Direct	245	Dark Blue	DRK BLU	Feed Rt F/D Sol Relay Controlled
155	Black	BLK	Ground Circuit - Direct	246	Dark Green	DRK GRN	Feed, Adl Lock Relay Coil
156	White	WHT	Ground Circuit-Sw Controlled-(Body Int Lamps)	254	Light Green	LGT GRN	Ground, A.D.L. Lt. Unlock Relay Coil
157	White/Black	WHT/BLK	Ground Circuit-Sw Controlled-(Body Int Lamps)	255	Yellow	YEL	Ground, A.D.L. Rt. Unlock Relay Coil
158	White/Dark Green	WHT/DRK GRN	Ground Circuit-Sw Controlled-(Body Int Lamps)	256	Dark Blue	DRK BLU	Ground, Rr Module Cont, Lamp Out Ind
159	Black	BLK	Ground, Key Warning Buzzer	261	Yellow	YEL	Theft Deterrent - Alarm Arm
160	White	WHT	Power Antenna - Down	262	Light Green	LGT GRN	Theft Deterrent - Key - Door Unlock & Alarm Disarm
161	Black	BLK	Power Antenna - Up	263	Light Blue	LGT BLU	Theft Deterrent - Alarm
162	Gray	GRA	Power Top - Up	264	Brown/White	BRN/WHT	Theft Deterrent - Key Unlock - All Doors
163	Purple	PPL	Power Top - Down	265	Black/White	BLK/WHT	Theft Deterrent - Door Unlock
164	Dark Blue	DRK BLU	Window Control - L.F. - Up	266	Black/Light Blue	BLK/LGT BLU	Theft Deterrent - Alarm Arm Abort
165	Brown	BRN	Window Control - L.F. - Down	267	Dark Green	DRK GRN	Pwr St - Fore & Up Recl
166	Dark Blue/White	DRK BLU/WHT	Window Control - R.F. - Up	268	Yellow	YEL	Pwr St - Aft & Down Recl
167	Tan	TAN	Window Control - R.F. - Down	269	Light Green	LGT GRN	Pwr St Sol Up & Down Recl
168	Dark Green	DRK GRN	Window Control - L.R. - Up	294	Tan	TAN	Door Lock Motor - Unlock
169	Purple	PPL	Window Control - L.R. - Down	295	Gray	GRA	Door Lock Motor - Lock
170	Light Green	LGT GRN	Window Control - RR - Up	394	Light Green/Black	LGT GRN BLK	Ground, Lt F/D Rem Handle Switch
171	Purple/White	PPL/WHT	Window Control - RR - Down	395	Light Blue	LGT BLU	Ground, Rt F/D Rem Handle Switch
172	Light Green	LGT GRN	Vent Control - L.F. - Close	900	Dark Blue	DRK BLU	Feed Lamp Monitor
173	Yellow	YEL	Vent Control - L.F. - Open	922	Brown	BRN	Rear Spkr - L.H. (Stereo)
174	Light Green	LGT GRN	Vent Control - L.F. - Close	933	Black	BLK	Electric Heated Back Wdo Glass - Left
175	Yellow/Black	YEL/BLK	Vent Control - R.F. - Open	935	White	WHT	Electric Heated Back Wdo Glass - Right
176	Dark Green	DRK GRN	Pwr or Seat Fore	950	White	WHT	Ground Circuit
177	Yellow	YEL	Power Seat Aft	977	Black	BLK	Speaker Ground
178	Dark Green	DRK GRN	Power Seat - 6-Way - Fore and Aft	978	Dark Blue	DRK BLU	Rear Speaker - R. H. (Stereo)
179	Tan	TAN	Power Seat - 6-Way - Solenoid - Rear Up & Down				

EXAMPLE: CIRCUIT No.

40 18 ORN

WIRE COLOR

WIRE GAUGE

9068

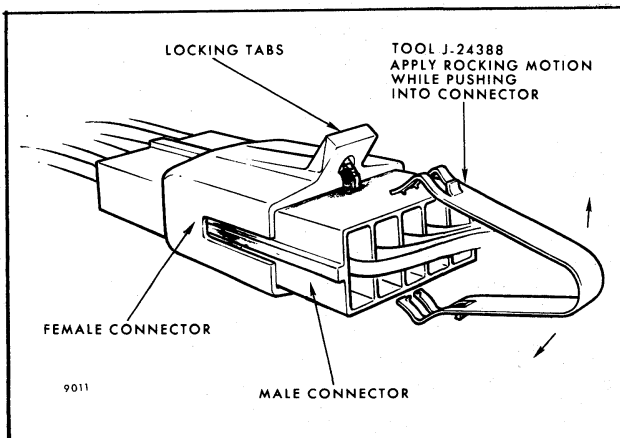


Fig. 10-5-Positive Locking Connectors

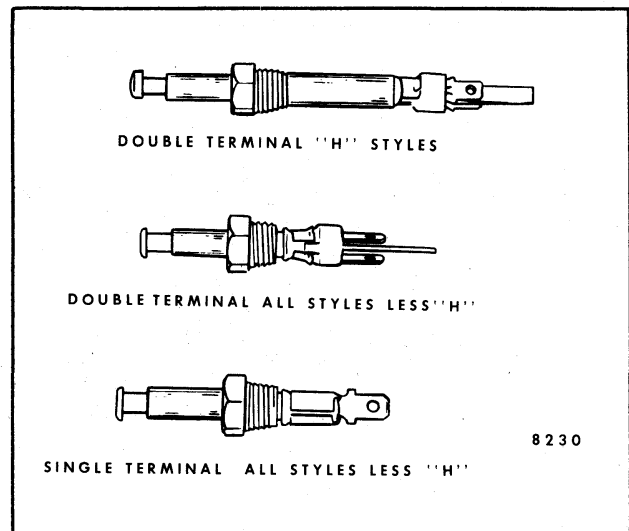


Fig. 10-6-Door Jamb Switches

GENERAL CHECKING AND BODY WIRING REPAIR PROCEDURES

WARNING: ON ALL CARS EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEMS, REFER TO AIR CUSHION RESTRAINT SYSTEM SERVICE MANUAL FOR PROPER IDENTIFICATION OF AIR CUSHION RESTRAINT SYSTEM COMPONENTS AND HARNESES TO AVOID ACCIDENTAL DEPLOYMENT WHEN TROUBLE SHOOTING ELECTRICAL PROBLEMS. DO NOT PROBE ANY AIR CUSHION RESTRAINT SYSTEM CONNECTORS OR COMPONENTS WITH ELECTRICAL TEST EQUIPMENT SUCH AS BATTERY OR AC POWERED OHMMETER, VOLTMETER, CONTINUITY LAMPS, ETC., OTHERWISE PERSONAL INJURY MAY RESULT.

Generally most common failures are "open" or "short" circuits. An "open" circuit is one in which the circuit cannot be completed due to a broken wire, poor terminal contact or improper ground.

A "short" circuit consists of a feed circuit that has been shorted and completed to ground before it reaches the intended operating unit or a ground circuit that is grounding prematurely. A short in a feed circuit will usually create an overload and activate the circuit breaker or "blow" the fuse. A short in a ground circuit will cause continuous operation of the operating unit.

DEFECTIVE COMPONENTS

Occasionally an "open" or "short" circuit exists within a circuit component, such as a motor, switch, relay, etc. These units can be checked by bypassing the suspected component.

Checking an Inoperative Switch:

Place a No. 12 jumper wire on the switch terminal block between the center terminal (feed) and one of the two motor wire terminals. If the motor operates, the switch is defective. The principle involved here is to bypass the suspected defective component and this procedure can be applied to check almost all component parts.

OPEN CIRCUITS

1. Visually inspect wire for damage.
2. If wire damage is apparent, check wire on battery side of suspected area by grounding one end of a light tester and inserting pointed end through insulation. If tester lights, current is present.

Perform same operation on opposite side of suspected area. If tester does not light, break is between check points.

NOTE: To check for current between a switch and an operating unit, switch must be actuated to insure current in the wire. Also, be sure that light tester is operating properly before checking circuit. Touch one end of tester to negative terminal of battery and other end to positive terminal. If battery is not discharged and tester is working properly, tester will light.

3. If no wire damage is apparent, check for current in wire midway between power source and inoperative component with a light tester. If tester does not light, check wire at intervals in direction of power source. If tester does light, proceed with tester in opposite direction until the break is located.
4. Repair broken wire as outlined under Body Wiring Repair procedures.

IMPROPER GROUND

Many times perfectly sound operating units, such as motors, are considered defective and are replaced because an effective ground is not established. To check for proper ground, refer to the following:

1. Attach one end of a No. 12 gauge jumper wire to body of inoperative unit.
2. Connect other end to a good ground, such as a bare metal panel.

NOTE: Due to various hinge construction and possibility of heavy lubrication on door hinges, it may be advisable to ground door inner panel to the body proper when checking circuits in an open door.

3. Energize unit. If unit operates, original ground is defective.
4. Re-establish the ground.

"SHORT" CIRCUITS

When a "short" exists in a given feed circuit, usually either the circuit breaker will be actuated or a fuse will be blown. However, if the "short" is located between a switch and an operating unit, the circuit breaker will not actuate or the fuse blow until the switch is actuated. If the "short" occurs between the circuit breaker (or fuse) and the switch, the circuit will be inoperative all the time. Also, on circuit breaker protected feed circuits that are not ignition controlled, a "drain" on the battery will continue until the "short" is repaired or the battery runs down.

A short in a grounded circuit such as used in the seat belt warning system will not cause the circuit to be inoperative. However, a short in a grounding circuit will cause continuous operation of the operating unit until corrected.

Short Tester Checking Procedure

Locating a short circuit depends largely on the symptoms. As an aid in locating a "short" in a feed circuit, a labor-saving device known as a "short tester" (J-8681, BT-1120 or equivalent) may be utilized. Its advantage is the fact that it does not require trim removal prior to testing operations. All short testers have the following parts in common:

1. Two leads with alligator clips (for bypassing an existing circuit breaker or fuse).
2. A 10 to 15 amp circuit breaker (to replace the existing circuit breaker or fuse).
3. A meter for detecting intermittent electrical current.

The tester meter is designed to react to the magnetic lines of force that surround an energized wire or conductor. However, the current must be interrupted at intervals by means of a circuit breaker incorporated into the testing device in order to cause the meter needle to deflect. The use of a "short" tester should include the following steps:

1. Reference should be made to service manual electrical diagrams in order to establish proper wire color identification.
2. Disconnect the affected circuit breaker (both wires) or remove blown fuse and substitute either of these items with the circuit breaker of the tester. This is accomplished by connecting the tester leads to the input and output side of the fuse clip or wires previously removed from the existing circuit breaker.
3. The tester may respond immediately by making a snapping noise. (This sound may be accompanied by a warning light on some testers.) This response is an indication that the "short" is located in a FEED line between the power source and a switch. If the tester does not respond, proceed as follows:
 - a. Turn on or actuate all switches in the inoperative circuit.
 - b. Observe all lights or units affected by actuating all switches. The light or unit that DOES NOT operate intermittently but causes the

tester to react is in the "shorted" circuit, and indicates the side of the car that is affected.

NOTE: When the affected circuit has been positively identified, reference should again be made to proper wire diagram as an aid in the steps that follow. In addition, switch in the circuit being checked must be held in closed position.

4. Beginning at power source for the inoperative circuit, place tester meter directly over the wire (or harness) with meter arrows parallel to the wire(s) being checked. The meter needle will deflect noticeably each time tester completes the circuit.

NOTE: Since this test will most often be made over intervening layers of trim material (cloth, rubber, plastic, metal), it may be necessary to move the meter laterally over the circuit at each check point to achieve the strongest signal on the meter.

5. Check progressively with the meter along the circuit from the power source to the inoperative unit. A sharp **DECREASE** in the **AMOUNT** of meter needle deflection will indicate the location (within 4-5 inches) of the "short". It must be remembered, however, that the above meter reaction would also occur if the wrong circuit was followed or the meter was not held directly above the circuit (reference "NOTE", in step 4).
6. Once the location of the "short" is accurately established, necessary trim parts may be removed to perform repairs as outlined under Body Wiring Repair Procedures.

BODY WIRING REPAIR PROCEDURES

Aluminum Wiring (Front Body Wiring Harness Only)

The aluminum front body wiring harness consists of 14 and 16 gauge insulated wires and is enclosed in a brown colored plastic conduit (copper wires are encased in a black conduit).

Due to reduced flexibility of aluminum wiring when compared to copper, the aluminum harness is used only in a location where it will remain in a stationary position. Also, a special repair kit, part no. 1684873 or equivalent, is available when repairs are necessary to aluminum wiring harness.

The kit consists of an assortment of 6" long aluminum wires with terminals attached to one end, splice

clips, tube of corrosion preventive compound and instruction sheet. To insure minimum resistance through a circuit when making repairs, it is essential that the materials included in this kit be utilized as outlined below. This is necessary to minimize the possibility of galvanic corrosion or increased resistance occurring between the terminal and wire and/or splice clip and wire. Increased resistance would materially affect the operation of the electrical components in the circuit being repaired.

1. TERMINAL REPLACEMENT

- a. Cut off approximately six inches (6") of wire connected to defective terminal.
- b. Using proper gauge wire strippers, strip off approximately 1/4" of insulation from end of wire to be repaired and wire from kit with terminal attached.

CAUTION: *Care should be exercised when stripping insulation from wire. If proper gauge strippers are not used, damage to wire may occur and weaken harness assembly at this point.*

- c. Place end of one wire in either end of splice clip and crimp firmly to wire. Repeat with remaining wire.

CAUTION: *To prevent possible damage to wire, do not over crimp near ends of splice clip.*

- d. When splice is completed, apply a coat of corrosion preventive compound (petroleum jelly) included in the repair kit to splice area and terminal.
- e. Apply tape to spliced area to insulate.
- f. Insert terminal into proper connector cavity making sure it is firmly seated.

2. **SPLICING TO CORRECT OPEN AND SHORT CIRCUITS** - Carefully strip ends of wire on both sides of open or shorted circuit. Then complete steps "c, d and e" under Terminal Replacement Procedure.

Copper Wiring (All Harnesses Except Front Body Wiring Harness)

Copper wiring is encased in a black conduit and can be repaired using conventional methods such as soldering and taping, solderless connectors, etc. In addition, terminal, connectors, etc., are available as replacement parts.

POWER WINDOWS

DESCRIPTION

The wiring harness for the electrically operated windows consists of the following major sections:

1. Crossover or center harness - this harness is installed beneath the instrument panel and completes the circuit from the left door and power source to the right door windows on all styles.
2. Front door window harness - the impact bar and reinforcements incorporated in some door construction reduces accessibility for power window wiring harness. Therefore, if replacement of door harness should become necessary, attach a leader to the end of the harness before removal from the door. On "B, C, E and F" styles the harness is routed directly from the door hinge pillar entrance to the inboard side of the door inner panel and routed in the depressions provided.
3. Front door window control rear harness ("F" styles only) - this harness is routed from the left shroud side panel along a recess in the left rocker inner panel. At a point opposite the driver's seat, the harness exits from the rocker and is routed below the seat to the center console at which point the single window switch is located. A front door opening carpet support covers the recess in the rocker panel while protecting and concealing the harness.
4. Feed harness to rear doors or quarter windows - on "A" styles this harness connects to the front crossover harness on the left side of the shroud (fire wall) and extends rearward in the main body harness conduit under the driver's seat.

On 4-door styles, the harness exits from the conduit slightly rearward of the front seat and routes to each center pillar. On 2-door styles, the harness continues in the conduit to the rear seat back panel and routes along the lower edge of that panel to each quarter.

On "B-C-E" styles, this harness is routed from the crossover harness at the shroud side panel (right and left side similar) into the conduit that is secured to the inboard side of the rocker panel and exits at the center pillar or at the quarter panel. This harness terminates at the window motor and window switch.

5. Rear door or quarter window harness - on "A" styles the left and right rear door harness con-

nects to the feed harness in the base of the center pillar. To disengage the connector, pull harness inboard at base of center pillar for accessibility.

Power windows are operated by a rectangular shaped 12 volt series-wound motor with an internal circuit breaker and a self-locking rubber coupled gear drive. The harness to the door window motor connector is designed with a locking embossment to insure a positive connection. When disengaging the harness connector from the door motor, it is necessary to depress the thumb release. When installing the harness, the thumb release must be held depressed until the embossment on the female connector is locked in the hole of the motor connector.

All styles except Cadillac use a relay in the window circuit to prevent window operation until the ignition switch is turned "ON". The feed circuit for Cadillac is through the ignition switch.

The relay is located on the left shroud side panel for all styles except the "F" style which is located on the steering column lower support.

A junction block (Fig. 10-7) located on the reinforcement at the left shroud is used to supply current to power operated equipment circuits. Current is supplied to the junction block from the circuit breaker, and the power window harness plugs into the junction block.

All four button window control switches incorporate an elongated, positive locking, nonconductive stud. The switch is secured to the harness connector by a "Tinnerman" type nut (Fig. 10-8).

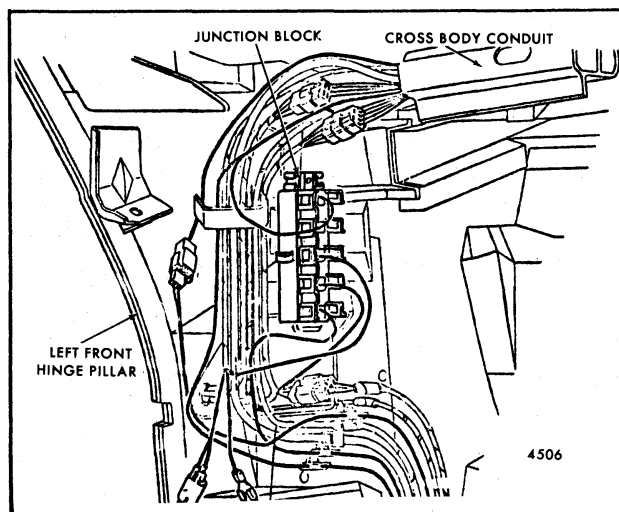


Fig. 10-7-Accessory Junction Block

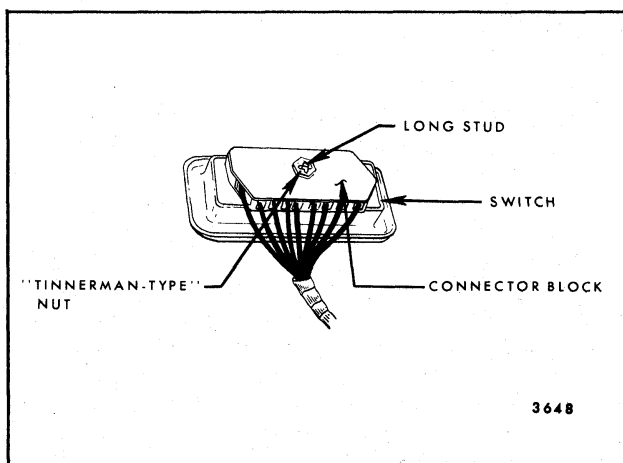


Fig. 10-8-Four Button Trim Pad Switch - Armrest Switch
Similar

On Cadillac styles only, a two position ("Lock-Normal") window blockout (cutout) switch is installed on the left front door armrest. This switch incorporates an elongated pin which protrudes through a hole provided in the harness connector back plate and a plastic coated, push on "Tinnerman" type nut is snapped over the pin.

The window blockout switch button should be left in the "NORMAL" position when ignition switch is "ON" to permit normal operation of power windows from all switch locations. If the control button is in the "LOCK" position with the ignition switch "ON", the windows will operate only from the master control switch.

POWER WINDOW CIRCUIT CHECKING PROCEDURES

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Be sure to check the harness connectors for proper engagement and become familiar with the typical circuit diagrams (Figs. 10-12, 10-13 10- 14, 10-15 and 10-16).

Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.

2. To check circuit breaker, disconnect the output feed wire (the wire opposite the power source feed to the breaker) from the breaker and with test light, check terminal from which wire was disconnected. If tester does not light, circuit breaker is inoperative.

Checking Ignition Relay Assembly

1. With test light, check relay feed (orange/black wire). If tester does not light, there is an open or short circuit between relay and circuit breaker.
2. Turn ignition switch "ON" and with test light check output terminal or relay (red/white wire). If tester does not light:
 - a. Put test light on ignition relay coil terminal (pink or tan wire).
 - b. If tester lights, replace ignition relay.
 - c. If tester does not light, locate short or open circuit along pink or tan wire (check fuse at dash panel).

Checking for Current at Master Window Control Switch

1. With ignition switch "ON", connect one test light lead to master window control switch feed terminal (red/white stripe) of switch block and ground other test lead.
2. If tester does not light, there is an open or short circuit between the relay and master control switch.
3. If tester does not light on Cadillac styles, check window blockout switch.

Checking Window Blockout Switch-Cadillac Styles Only

1. With the ignition switch "ON", insert one end of a No. 12 gauge jumper wire into the terminal with the red/white stripe wire and the other end into the terminal with the pink/black stripe wire.
2. Operate control switches. If any of the windows operate with the jumper but not with the block-out switch, the switch is defective.

Checking Feed Circuit Continuity at Window Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other tester lead to body metal (Fig. 10-9).

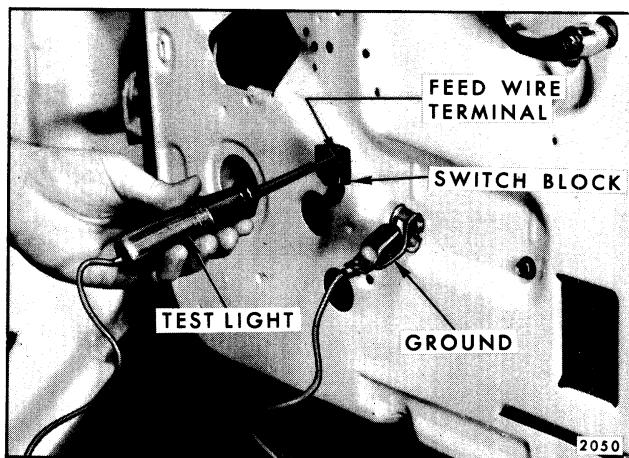


Fig. 10-9-Checking Feed Circuit

2. If tester does not light, there is an open or short circuit between switch and power source.

Checking Window Control Switch

1. Insert one end of a No. 12 gauge jumper wire to the switch feed terminal and the other end to one of the motor lead terminals in the switch block. Repeat this check on the remaining motor lead terminal (Fig. 10-10).
2. If the window operates with the jumper wire, but does not operate with the switch, the switch is defective.

Checking Wires Between Door Window Switch and Door Window Motor

1. Disengage harness connector from window motor. The thumb release on the harness connector must be depressed before it can be disengaged from the motor.
2. Insert one end of a No. 12 gauge jumper wire to the switch feed terminal and the other end to one of the motor lead terminals in the switch block (Fig. 10-10).
3. With test light, check for current at motor harness connector terminal being tested. If tester does not light, there is an open or short circuit in the harness between the control switch and motor connector (Fig. 10-11).
4. Check other terminal.

Checking Wires Between Quarter Window Switch and Quarter Window Motor

1. Insert one end of a No. 12 gauge jumper wire in the switch feed terminal and the other end in one of the motor lead terminals of the switch block (Fig. 10-10).

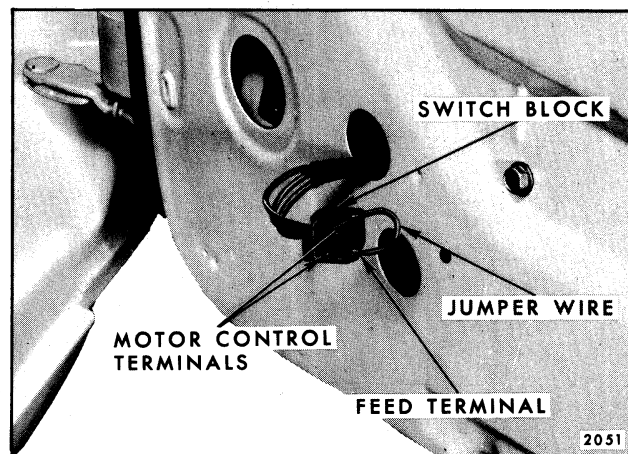


Fig. 10-10-Checking Window Control Switch

2. With a test light, check for current at the corresponding terminal at the motor harness connector. If tester does not light, there is an open or short circuit between control switch and motor connector (Fig. 10-11).

3. Check other terminal.

Checking Window Motor

1. Check window regulator and channels for possible mechanical bind of window.
2. Check attachment of window motor to insure an effective ground.
3. Connect one end of a No. 12 gauge jumper wire to the power source and the other end to one of the terminals on the window motor.
4. Check the other motor terminal in the same manner. If the motor fails to operate with a jumper wire, the motor is defective and should be replaced.

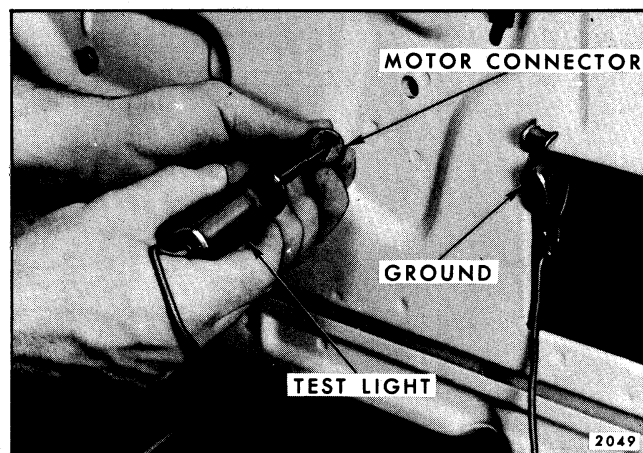
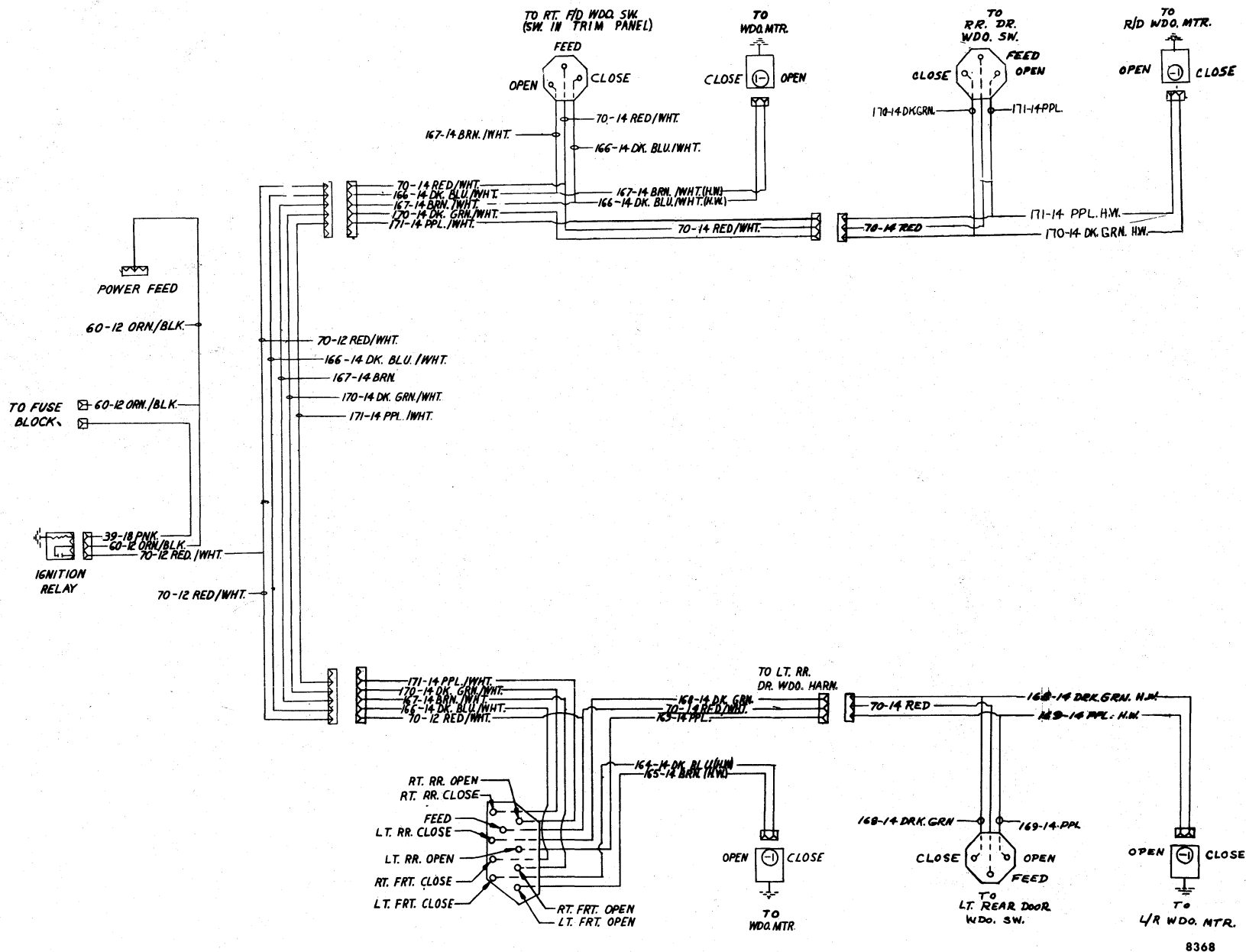


Fig. 10-11-Checking Circuit Between Switch and Motor

Fig. 10-12-Four-Door Power Window Circuit Diagram - "A and X" Styles (2-Door Similar)



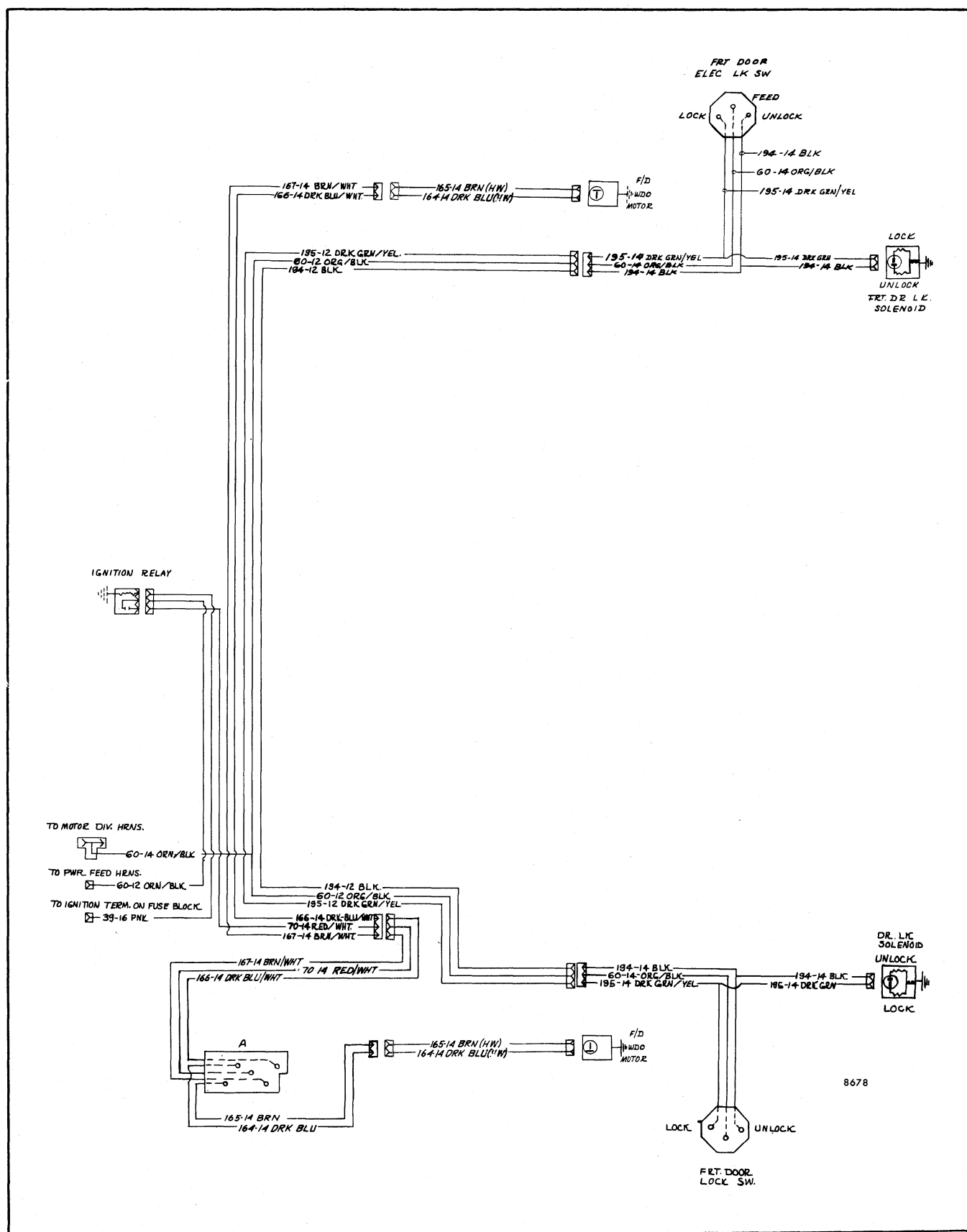


Fig. 10-13-Power Window and Electric Door Lock Circuit Diagram - Chevrolet "F" Styles

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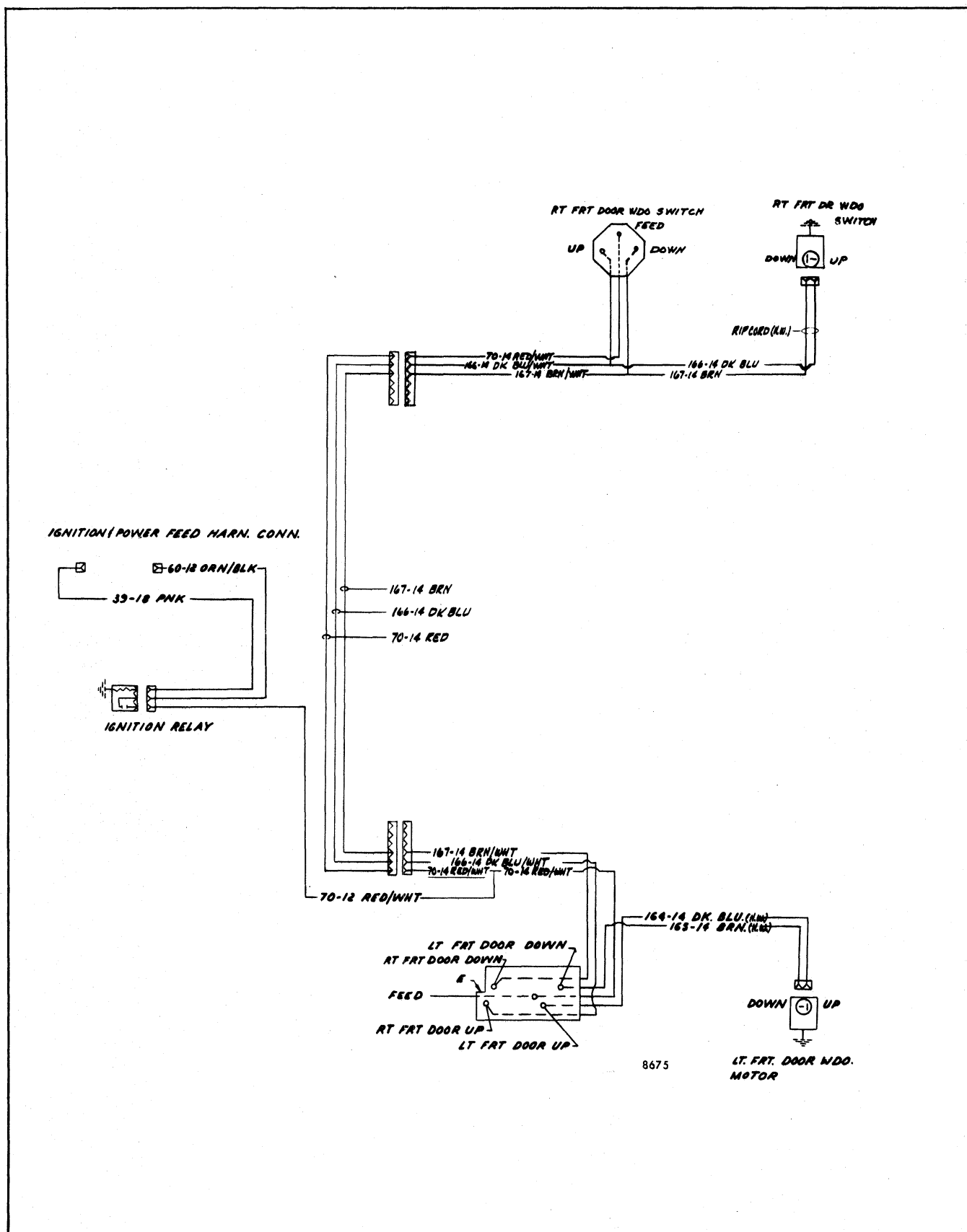


Fig. 10-15-Power Window Circuit Diagram - Two Window Type - "B, C and E" Styles (Less Cadillac Styles)

Fig. 10-16-Power Window Circuit Diagram - 4-Door Type - "B, C and E" Styles (2-Door Similar)

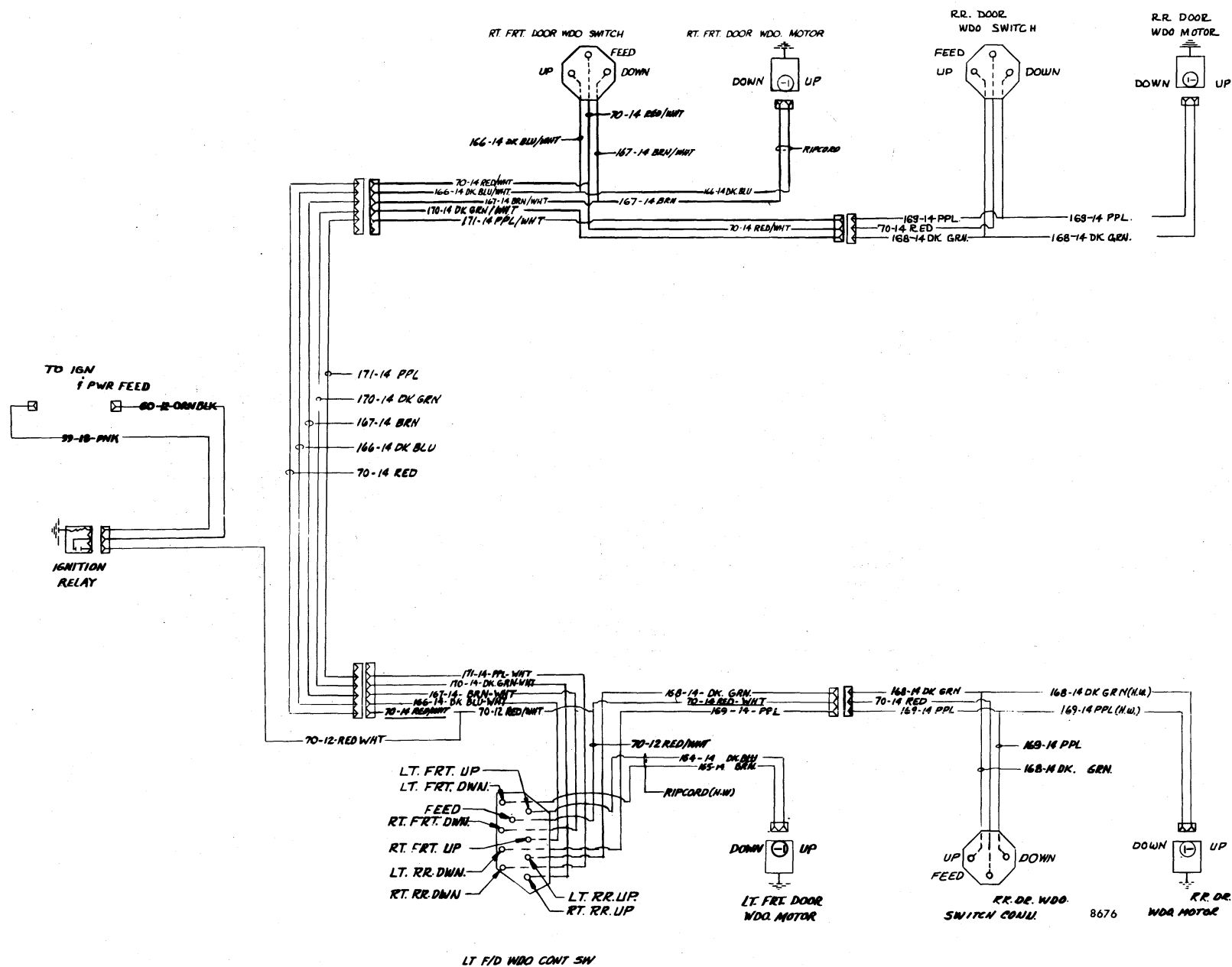
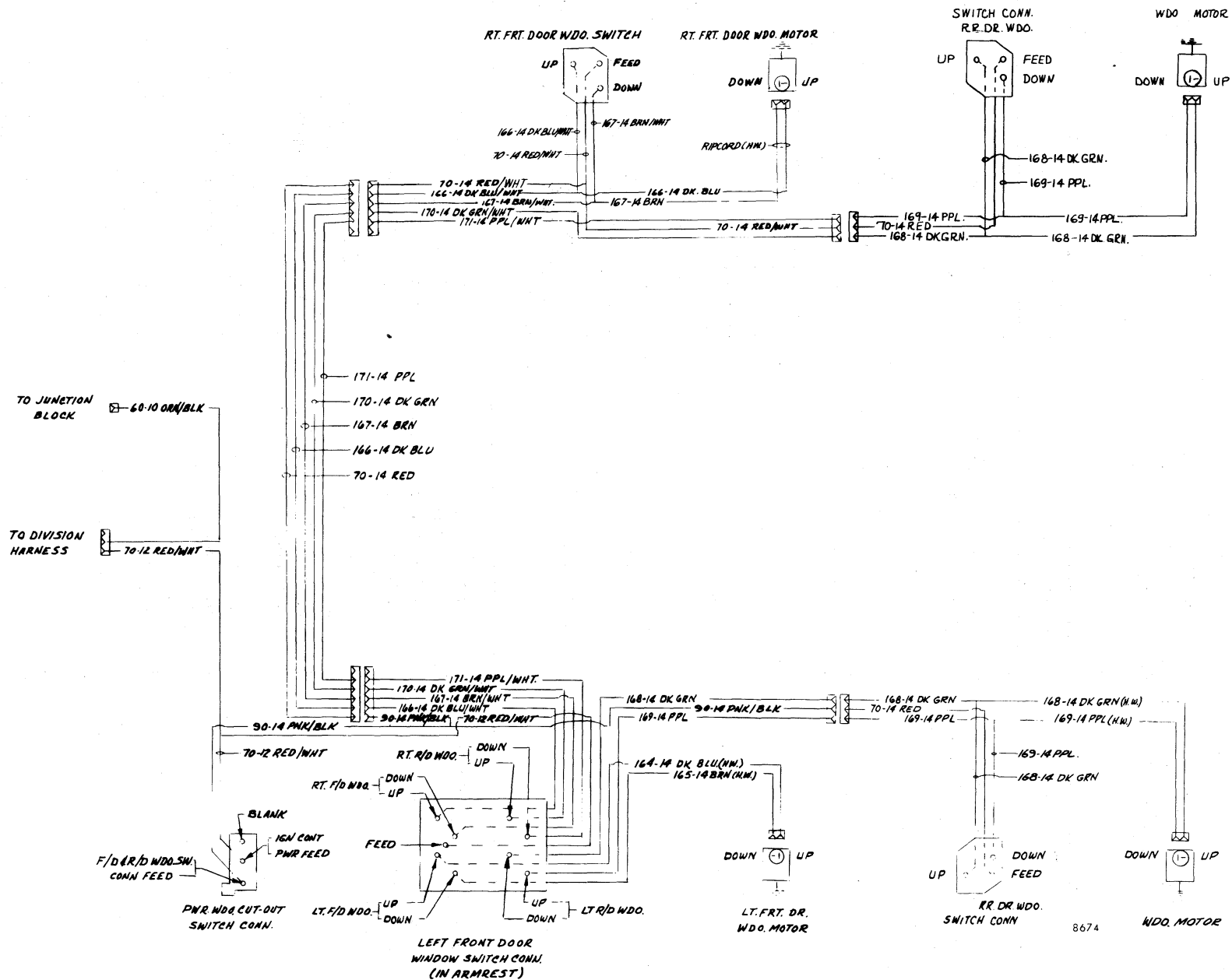


Fig. 10-17-Power Window Circuit Diagram - Typical Cadillac 4 Door Style



Diagnosis Chart

The following typical conditions and corrections have been listed as an aid for eliminating electrical problems in the power window electrical circuit. It

should be noted that multiple problems in the circuit may lead to a combination of conditions, each of which must be checked separately.

CONDITION	APPARENT CAUSE	CORRECTION
1. None of the windows will operate with ignition switch "ON".	<p>A. Short or open circuit in power feed circuit.</p> <p>B. Defective window control switch ("F" style only).</p>	<p>A. Check circuit breaker operation.</p> <p>B. Check ignition relay operation.</p> <p>C. Check feed connection to power harness beneath instrument panel.</p> <p>D. Check feed circuit wires for possible short or open circuit.</p> <p>E. Check window blackout switch (Cadillac styles only).</p> <p>A. Check window control console switch ("F" style only).</p>
2. Right rear door window does not operate from master control switch on left door or from control switch on right rear door. Left door window operates.	<p>A. Short or open circuit between right rear door harness and power window front harness.</p> <p>B. Short or open circuit in affected window control switch or window motor circuit.</p> <p>C. Possible mechanical failure or bind in window channels.</p> <p>D. Defective window motor.</p>	<p>A. Check harness connectors beneath outer end of instrument panel for proper installation.</p> <p>B. Check wires in power window front harness for possible short or open circuit.</p> <p>C. Check operation of rear door window control switch.</p> <p>D. Check circuit from window control switch to window motor for short or open circuit.</p> <p>E. Check window regulator and channels for possible mechanical failure or bind.</p> <p>F. Check operation of motor.</p>

DIAGNOSIS CHART (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
3. Right door windows will operate from left door master control switch but will not operate from right door control switch. Left door windows operate.	A. Open or short circuit in front harness feed wire circuit.	A. Check feed wire in front harness for possible short or open circuit.

POWER OPERATED STATION WAGON TAILGATE WINDOW AND TAILGATE - "B" STYLES

ELECTRICAL TAILGATE WINDOW CIRCUIT

Description

On all "B" styles, power operated tailgate windows are standard equipment. The window is controlled by a gearbox type regulator, a rectangular shaped 12 volt DC, reversible motor with an internal circuit breaker, guide cams and rollers, drive cable and lift spring. In addition to the internal circuit breaker in the motor, the wiring circuit is protected by a protective circuit breaker.

An ignition relay prevents operation of the tailgate window from the instrument panel switch until the ignition switch is turned "ON". The external tailgate window control switch is mounted on the rear of the right quarter outer panel adjacent to the tailgate. On styles equipped with a power operated tailgate, the switch controls both the gate and glass.

On styles equipped with a manually operated tailgate, the switch includes a link to the gate lock lever. Turning the key clockwise will open the tailgate window. After the window is open approximately eight inches, the knob can be turned to unlock the tailgate. The window can not be fully closed until the tailgate is fully closed.

On styles equipped with a power operated tailgate, the switch includes three detent positions in each of the clockwise and counterclockwise directions. Turning the key clockwise to the first detent position will open the tailgate window. The second detent position will open the tailgate, and the third detent position will provide simultaneous opening of the tailgate and tailgate window. Turning the key counterclockwise to the first detent position will close the tailgate window, the second detent position will close the tailgate and the third detent will close both simultaneously.

ELECTRICAL TAILGATE CIRCUIT

Description

The power operated tailgate is controlled by a lift arm hinge and regulator assembly, equipped with a rectangular shaped, 12 volt DC, reversible direction motor with an internal circuit breaker.

In addition to the circuit breaker in the motor, the wiring circuit is protected by a protective circuit breaker (refer to Electrical Section Description for locations).

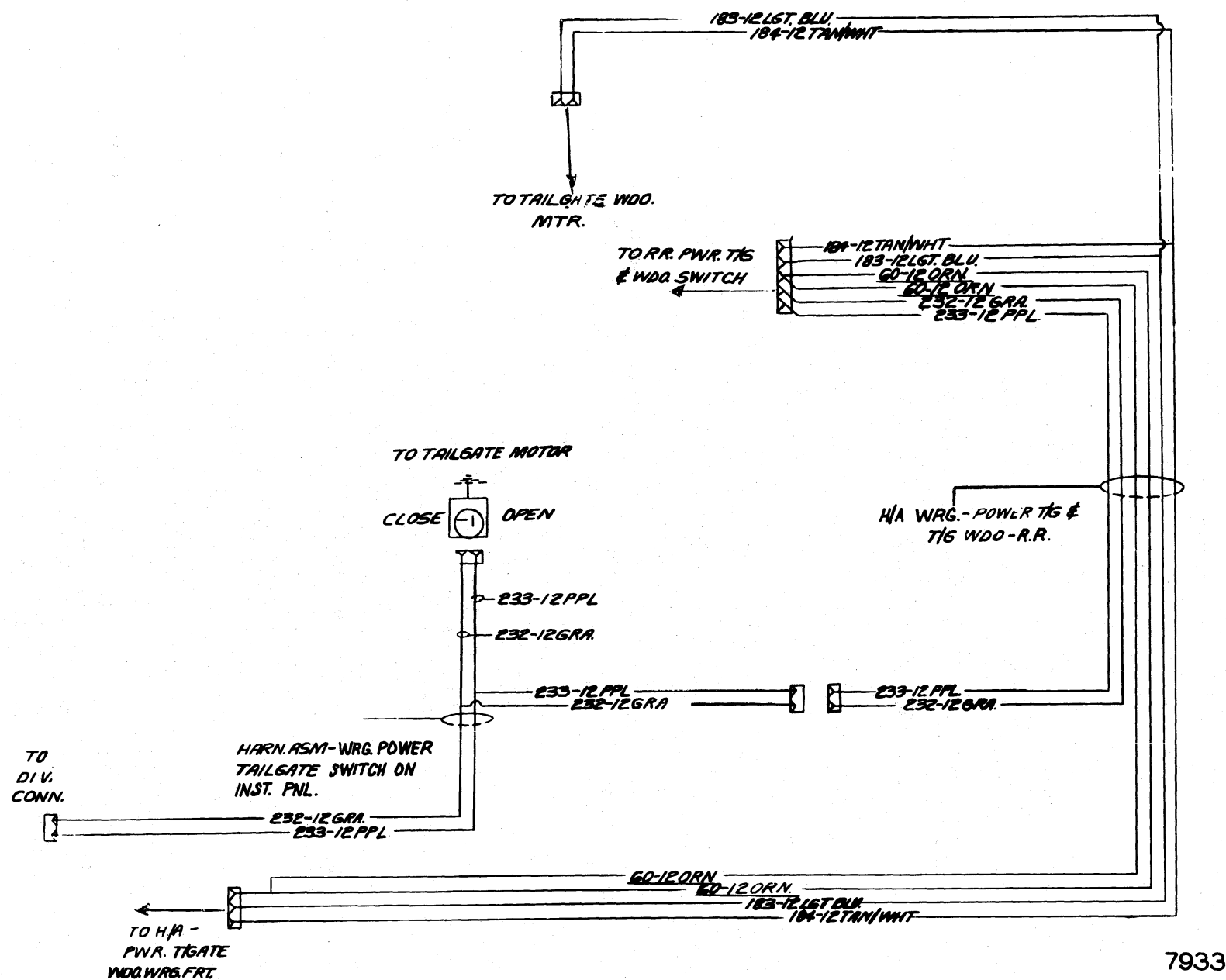
Power operated tailgates can be controlled by an instrument panel mounted switch or a key operated switch located at the rear of the right quarter outer panel adjacent to the tailgate. The key operated switch controls both the tailgate and tailgate window. Operation of the switch is described under Electrical Tailgate Window Circuit.

On all styles, the tailgate can be operated from the instrument panel control switch when the ignition switch is turned to run position and the transmission is in "PARK" or "NEUTRAL" ("PARK" only on some styles).

The tailgate window and tailgate harness is enclosed in the body wire harness conduit and consists of two sections. The front section extends to the rear of the left wheelhouse just below the left quarter window (rear harness connectors are located here).

The rear harness is routed along the rear cross bar panel to the tailgate window motor and switch at the right back opening lock pillar, and to the tailgate motor mounted on the rear of the left quarter inner panel.

Fig. 10-18-Rear Tailgate and Tailgate Window Circuit Diagram - "B-35,45" Styles



NOTE: Should replacement of front harness become necessary, access to front and rear harness connector may be gained by removing the left rear quarter trim pad. A leader should be secured to the end of the harness to aid in installation of replacement harness.

CHECKING PROCEDURE - TAILGATE WINDOW AND TAILGATE

Before performing an intensive checking procedure to determine any failure of the circuit, check all the connectors for proper installation. The checking procedures may be used to check the operation of a switch or motor after the cause of the electrical failure has been isolated to a particular part of the circuit. Refer to Figure 10-18 of this section.

Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.
2. To check circuit breaker, connect one test light lead to the output terminal and ground other lead. If tester does not light, circuit breaker is inoperative.

Checking Relay Assembly

1. With test light check relay feed (orange/black wire). If tester does not light, there is an open or short circuit between relay and circuit breaker.
2. Turn ignition switch "ON" and with test light check output terminal of relay (red/white wire). If tester does not light, put test light on relay coil feed (tan or pink wire) and if lamp lights, replace relay. If tester does not light locate open or short in pink or tan wire (check fuse if shorted).

Checking Feed Circuit Continuity at Control Switch on Instrument Panel

1. Turn ignition switch "ON" and disengage harness connector from switch. Connect one test light lead to feed terminal of switch connector and ground other test lead to body metal. If tester does not light, there is an open or short circuit between switch and power source.

Checking Control Switch at Instrument Panel

1. Turn ignition switch "ON" and disengage harness connector from switch.

2. Use a No. 12 gauge jumper wire and insert one end into feed terminal and other end into one of the other terminals. Tailgate window motor should operate.
3. Repeat procedure for other terminal. If tailgate window motor operates with jumper wire but does not operate with control switch, switch is defective.

Checking Key Operated Window Control Switch on Right Quarter Panel

1. Remove key switch assembly as indicated in Tailgate Section of this manual.
2. Disengage connector block from key switch assembly.
3. Use a test light to determine if current is present at feed terminal.
4. Apply procedure outlined in checking instrument panel switch to determine if switch is defective.

Checking Key Operated Window and Tailgate Control Switch on Right Quarter Panel

1. Remove key switch assembly as indicated in Tailgate Section of this manual.
2. Disengage connector block from switch assembly.
3. Use a test light to determine if current is present at feed terminal.
4. Use a No. 12 gauge jumper wire and insert one end into feed terminal of connector and other end into one of the terminals to the tailgate window motor. Tailgate window motor should operate.
5. Repeat procedure for other tailgate window terminal. If tailgate window motor operates with jumper wire but does not operate with control switch, switch is defective.
6. Repeat steps 4 and 5 inserting the jumper wire into feed terminal and terminals to tailgate motor. If tailgate motor operates with jumper wire but does not operate with control switch, switch is defective.

If tailgate window and tailgate motors operated in steps 4, 5 and 6 but will not operate simultaneously with switch, switch is defective.

Checking Tailgate Window and Tailgate Motor

1. Disconnect harness connector from motor.
2. Connect positive side of power source to one of motor terminals and negative side to body metal.

Motor should operate. To check reverse operation of motor, connect power source to other motor terminal. If motor does not operate in both directions replace motor.

3. On tailgate window motor, use same checking procedure explained for tailgate motor.

DIAGNOSIS CHART - TAILGATE WINDOW AND TAILGATE

CONDITION	APPARENT CAUSE	CORRECTION
1. Tailgate window opens and closes from quarter outer panel switch, but does not operate from instrument panel switch.	A. Open or short circuit from power source to instrument panel control switch. B. Defective or inoperative control switch.	A. Check affected wiring and/or ignition relay. B. Check operation of switch.
2. Tailgate window or tailgate will not operate up or down from any of the control switches.	A. Open or short circuit from power source to switches or motor. B. Motor not connected or poorly grounded. C. Mechanical bind or failure in tailgate window or tailgate mechanism. D. Defective tailgate window or tailgate motor.	A. Check operation of circuit breaker; check affected circuit for open or short circuit. B. Check connectors to motor for proper engagement. C. Check mechanical parts for bind or failure. D. Check operation of motor.

POWER SEATS**HORIZONTAL POWER SEATS****Description**

The seat adjusters are actuated by a 12 volt series-wound motor located near the front left side of the seat bottom frame, and are energized through a control switch installed in the seat side panel or in the door armrest.

For circuit diagram see Figure 10-19.

The horizontal seat circuit is protected by a circuit

breaker (refer to Electrical Section Description for specific location).

A junction block (Fig. 10-20) located on the reinforcement at the left shroud is used to supply current to the power operated seat circuit. Current is supplied to the junction block from the circuit breaker, and the power seat harness feed wire plugs into the junction block.

The trouble diagnosis chart will help locate typical problems which may occur.

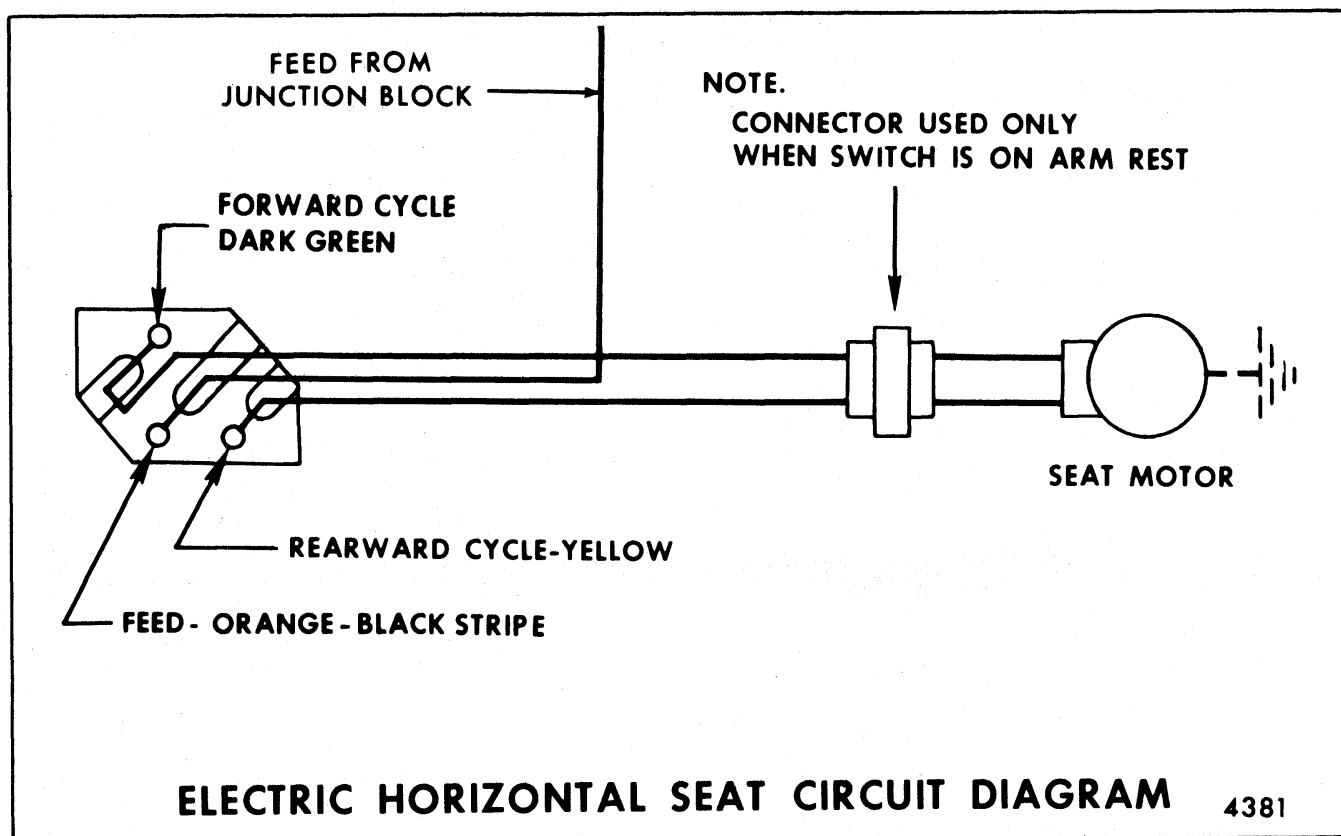


Fig. 10-19-Horizontal Seat Circuit

DIAGNOSIS CHART - HORIZONTAL SEAT

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat motor does not operate in either forward or rearward direction.	A. Open or short circuit in feed harness.	A. Connect one test light lead to feed terminal of switch block (orange/black wire) and ground other tester lead to body metal. If tester does not light, there is an open or short circuit between switch and power source.
	B. Inoperative motor.	B. Check operation of seat control switch with jumper wire. See "Checking Door Window Control Switch" for similar operation.
		C. Check circuit from control switch to motor for short or open circuit and check ground wire attachment of adjuster.

DIAGNOSIS CHART-HORIZONTAL SEAT (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
		<p>D. Check operation of motor with No. 12 gauge jumper wire. Connect one end of jumper wire to power source and the other end to one of the seat motor terminals. Motor should operate.</p> <p>Perform same check at the other motor terminal. If motor does not operate, repair or replace motor as required.</p>
2. Seat motor operates in only one direction.	<p>A. Defective switch.</p> <p>B. Open or short circuit in motor feed wires.</p> <p>C. Defective seat motor.</p>	<p>A. Check operation of seat control switch with jumper wire.</p> <p>B. Check circuit from control switch to motor for short or open circuit.</p> <p>C. Check operation of motor with No. 12 gauge jumper wire.</p> <p>Connect one end of jumper wire to power source and the other end to one of the seat motor terminals. Perform same check at the other motor terminal. If motor does not operate, repair or replace motor as required.</p>

SIX-WAY POWER SEATS

Description

The seat adjusters for the 6-way seats are actuated by a 12 volt motor installed at the left side of the seat assembly.

The motor is energized by a three button-type control switch located in the left seat side panel or in the left front door armrest.

The power seat circuit is protected by a circuit breaker (refer to Electrical Section Description for location).

A junction block (Fig. 10-20) located on the reinforcement at the left shroud is used to supply current to the power operated seat circuit. Current is supplied to the junction block from the circuit breaker, and the power seat harness feed wire plugs into the junction block.

The electrical portion of the six-way seat operates as follows:

When the control switch is actuated, current flows to the transmission solenoid which controls the desired seat movement. The energizing of the solenoid coil results in the solenoid plunger dog engaging the gear mechanism to rotate the control cable. The same

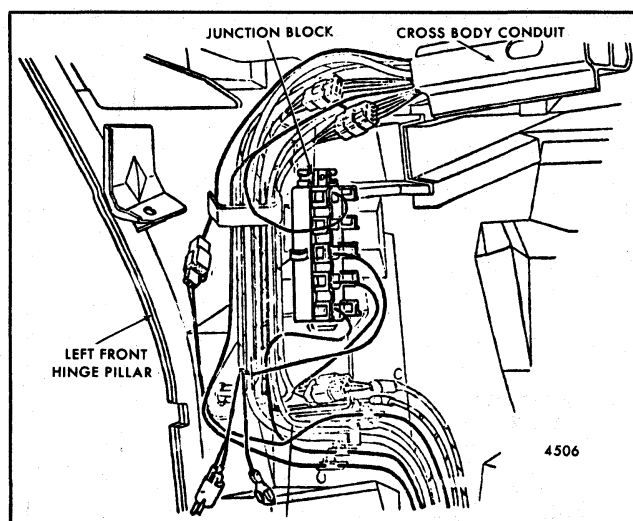


Fig. 10-20-Accessory Junction Block

switch action which energized the solenoid completes the circuit to one of the motor field coils. The current flows through the relay coil, closes the contacts between the relay power source and the motor armature feed wire, and results in the operation of the seat motor. When the control switch lever is released, the switch contacts open, a spring returns the shaft dog and solenoid plunger to their original position disengaging them from the gear dog.

CIRCUIT CHECKING PROCEDURES - SIX-WAY SEAT

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Before performing any extensive checking procedures, check the seat adjuster drive cables for proper attachment. In addition, study the seat circuit diagrams to become familiar with the seat circuit (Fig. 10-21).

Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to input side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.
2. To check circuit breaker, connect test light lead to the output side of breaker and ground other lead. If tester does not light, circuit breaker is inoperative.

Checking Feed Circuit Continuity at Relay on Seat Motor

1. Disengage triple connector body from seat motor relay terminal (Fig. 10-22).
2. Insert one test lead into relay power feed (orange/black wire) connector slot or harness, and ground other test light lead.
3. If tester does not light, there is no current at end of feed wire. Failure is caused by an open or short in feed circuit.

Check Feed Circuit Continuity at Seat Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other test lead to body metal.
2. If tester does not light, there is an open or short circuit between switch and power source.

Checking Seat Control Switch

NOTE: In the following operations which specify the seat control switch to be actuated, a switch that has been checked for proper operation may be connected to the switch block. If a switch is not available, a three-way jumper wire can be made to perform the switch function. The jumper wire and the switch locations to be connected to obtain a specific movement of the seat are shown in Figures 10-23 and 10-24. If a jumper wire is used, letter the locations on the switch block as indicated in the illustration. Details outlining the making and use of the jumper wire follow the checking procedure.

1. Obtain switch or jumper wire and connect to switch block.
2. Operate switch. If adjusters operate with new switch or jumper wire, but did not operate with original switch, the original switch is defective.
3. Check all six movements of seat adjuster.

Checking Wires Between Control Switch and Motor Relay

1. Disengage triple harness connectors from relay at motor.
2. Insert one test light lead into motor field (yellow or dark green wire) connector slot on harness and ground other lead.

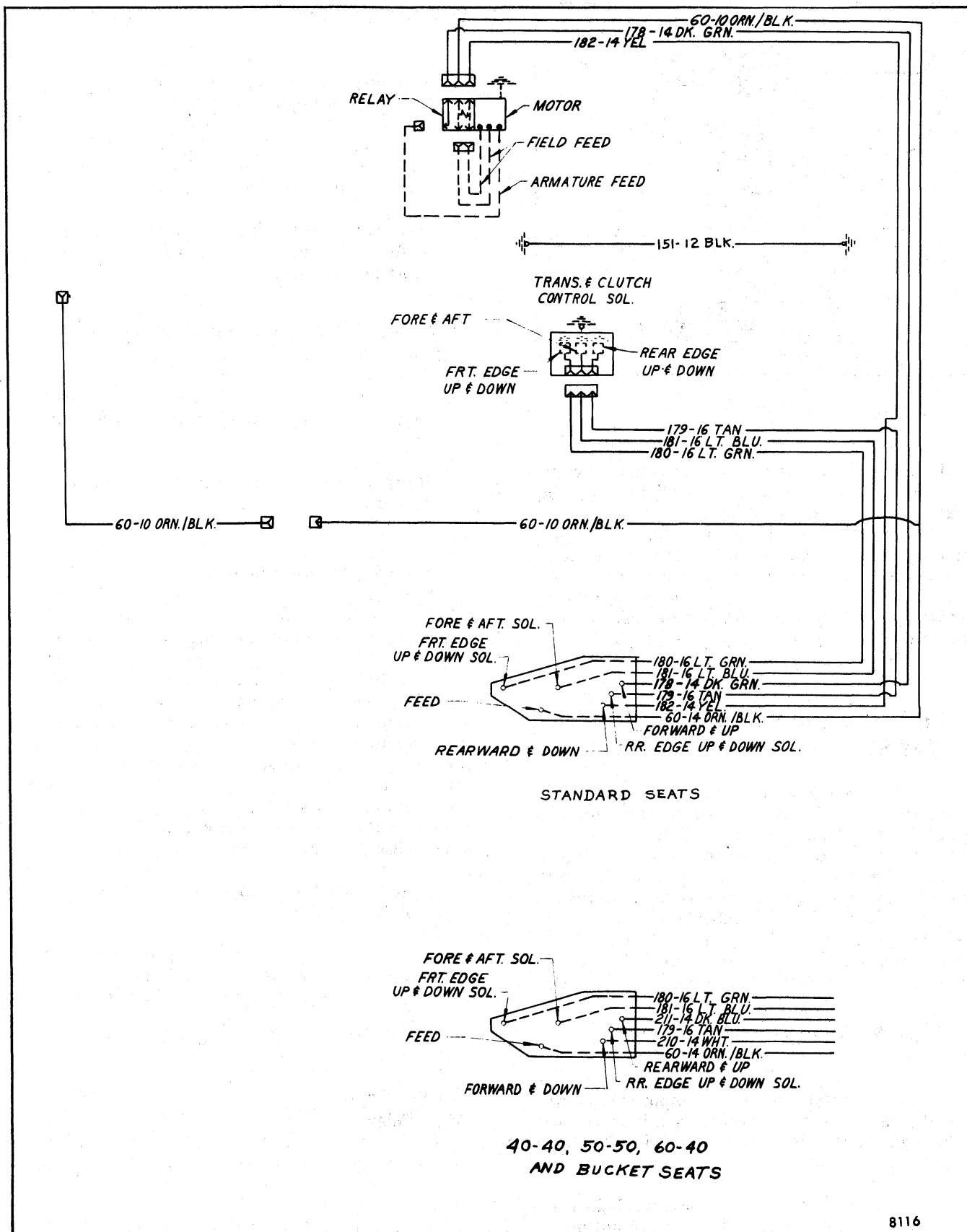


Fig. 10-21-Six-Way Seat Circuit - "A" Style Shown ("B, C and E" Styles Similar)

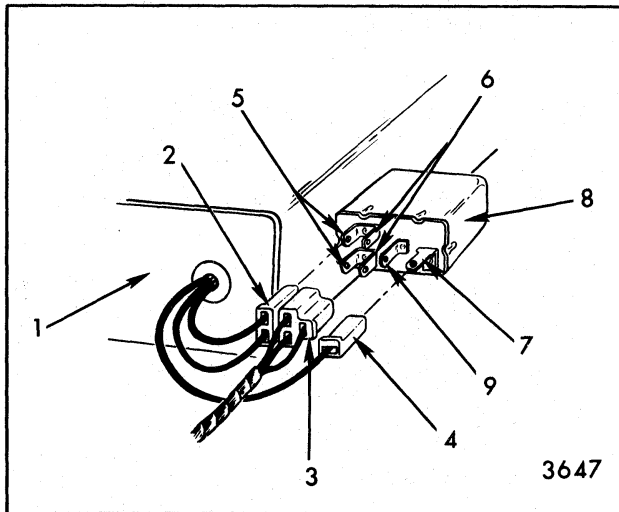


Fig. 10-22-Seat Adjuster Motor Control Relay

- | | |
|--------------------------------------|---------------------------|
| 1. Seat Adjuster Motor | 5. Motor Field Feed Studs |
| 2. Motor Field Connector | 6. Relay Coil Studs |
| 3. Control Switch to Relay Connector | 7. Armature Feed Stud |
| 4. Motor Armature Connector | 8. Motor Control Relay |
| | 9. Relay Input Stud |

3. Actuate seat switch to energize field wire being tested.
4. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch. Check other motor field wire in the same manner.

Checking Motor Control Relay

1. Disconnect three motor leads (double and single connector) from relay assembly. These are wires leading from the motor to relay (Fig. 10-22).
2. Connect one end of a jumper wire to one of motor field feed studs on relay and ground other end of the jumper wire.
3. Connect one end of test light to motor armature feed stud on relay and ground other tester lead.
4. With a jumper wire, energize field stud which is not grounded. If tester does not light, relay is defective.

Checking the Motor Assembly

1. Check seat ground wire attachment for proper ground.

2. Disconnect motor armature feed wire and motor field feeds from relay assembly.
3. With a jumper wire, energize armature feed and one of field feeds.
4. If motor does not operate, it is defective. Check other motor field wire in same manner.

Checking the Wire Between Solenoid and Switch

1. Disengage harness connector from transmission.
2. Connect one test light lead to end of harness wire being tested and ground other lead.
3. Operate switch to energize wire being tested. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch.
4. Check other wires between solenoid and switch in same manner.

Checking Solenoids

1. Check seat ground wire attachment for proper ground.
2. Energize solenoid being checked with jumper wire.

NOTE: If solenoid is functioning, a "click" should be heard when solenoid is energized.

CAUTION: To prevent damaging solenoid, do not energize solenoid for more than one minute.

3. With solenoid energized, actuate seat control switch to energize adjuster motor.
4. If adjusters do not operate, and there is no mechanical failure in seat unit, solenoid is defective.

Three-Way Jumper Wire for Checking Seat Switch

To make jumper wire, obtain two pieces of No. 12 gauge wire, each 4-1/2" long, join one end of each wire as shown in Figure 10- 23. The joined end can be inserted in the feed location in the switch block; one of the remaining ends can be inserted into one of the field locations in the switch block; the other end can be inserted into one of the solenoid locations.

NOTE: To obtain a seat movement using a 3-way jumper wire at the switch block, the switch feed location, one of the motor field wire locations and one of the solenoid locations must be connected simultaneously.

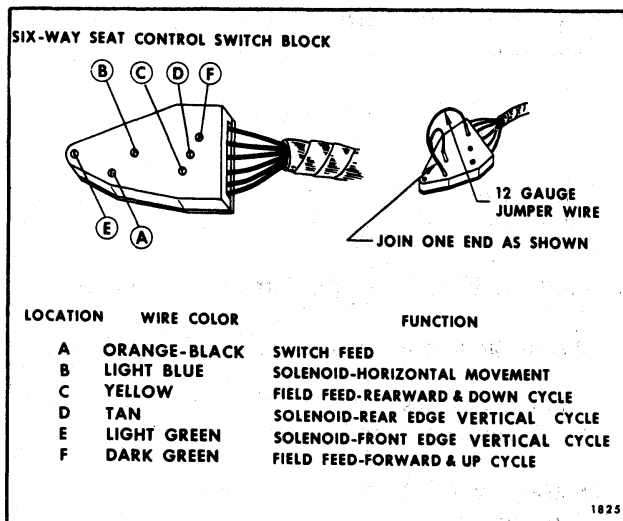


Fig. 10-23-Six-Way Seat Switch Block in Seat Side Panel

1. On bodies with switch in seat side panel (Fig. 10-23) proceed as follows:

- To raise front end of seat, place jumper in locations A, F and E.
- To lower front edge of seat, place jumper in locations A, C and E.
- To raise rear edge of seat, place jumper in locations A, F and D.
- To lower rear edge of seat, place jumper in locations A, C and D.
- To move seat forward, place jumper in locations A, B and F.

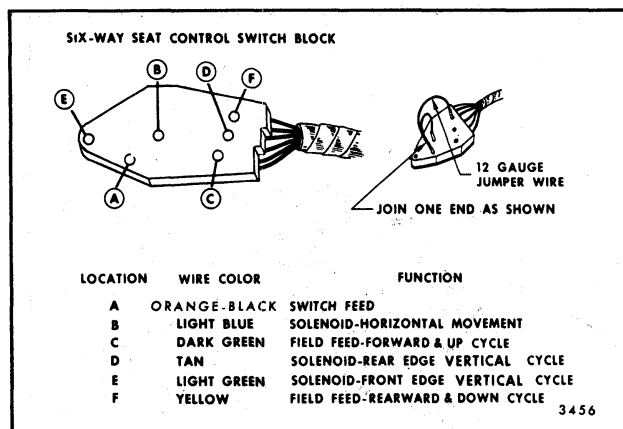


Fig. 10-24-Six-Way Seat Switch Block in Armrest

f. To move seat rearward, place jumper in locations A, C and B.

2. On bodies with switch in armrest (Fig. 10-24), proceed as follows:

- To raise front edge of seat, place jumper in locations A, C and E.
- To lower front edge of seat, place jumper in locations A, F and E.
- To raise rear edge of seat, place jumper in locations, A, C and D.
- To lower rear edge of seat, place jumper in locations A, F and D.
- To move seat rearward, place jumper in locations A, F and B.

DIAGNOSIS CHART - SIX-WAY SEAT

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat adjuster motor does not operate.	A. Short or open circuit between power source or switch and motor.	A. Check circuit from power source and switch to motor to locate failure.
	B. Defective motor.	B. Check motor. If defective, repair or replace as required.

DIAGNOSIS CHART - SIX WAY SEATS (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
2. Seat adjuster motor operates, but seat adjusters are not actuated or seat adjuster motor operates, front edge of seat moves up and seat moves forward and rearward. The rear edge of seat cannot be operated.	A. Short or open circuit between switch and affected solenoid. B. Defective solenoid.	A. Check circuit from switch to solenoid to locate failure. B. Check solenoid. If defective, repair or replace as required.
3. Seat adjuster motor operates and seat adjusters move front and rear edge of seat up and forward but will not move the seat down and rearward or seat adjuster motor operates and seat adjusters move front and rear of seat down and rearward, but will not move the seat up and forward.	A. Short or open circuit between one of the motor field wires and seat control switch. B. Defective field coil in motor.	A. Check circuit between affected motor field wire and seat switch. B. Check motor. If defective, repair or replace as required.

FOUR-WAY POWER SEAT AND RECLINER - CADILLAC "C-E" STYLES

Description

The seat adjusters for the four-way power seat and recliner are actuated by a 12 volt motor installed to the seat assembly.

The motor is energized by a three button-type control switch located in the right seat side panel.

The power seat circuit is protected by a circuit breaker (refer to Electrical Section Description for location).

A junction block (Fig. 10-25) located on the reinforcement at the left shroud is used to supply current to the power operated seat circuit. Current is supplied to the junction block from the circuit breaker,

and the power seat harness feed wire plugs into the junction block.

The electrical portion of the four-way power seat and recliner operates as follows:

When the control switch is actuated, current flows to the transmission solenoid which controls the desired seat movement. The energizing of the solenoid coil results in the solenoid plunger dog engaging the gear mechanism to rotate the control cable. The same switch action which energized the solenoid completes the circuit to one of the motor field coils. The current flows through the relay coil, closes the contacts between the relay power source and the motor armature feed wire, and results in the operation of the seat motor. When the control switch lever is released, the switch contacts open, a spring returns the shaft dog and solenoid plunger to their original position disengaging them from the gear dog.

FOUR-WAY POWER SEAT AND RECLINER CHECKING PROCEDURES

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps, required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Before performing any extensive checking procedures, check the seat adjuster drive cables for proper attachment. In addition, study the seat circuit diagrams to become familiar with the seat circuit (Fig. 10-26).

Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to input side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.
2. To check circuit breaker, connect test light lead to the output side of breaker and ground other lead. If tester does not light, circuit breaker is inoperative.

Checking Feed Circuit Continuity at Relay on Seat Motor

1. Disengage triple connector body from seat motor relay terminal (Fig. 10-28).
2. Insert one test lead into relay power feed (orange/black wire) connector slot or harness, and ground other test light lead.

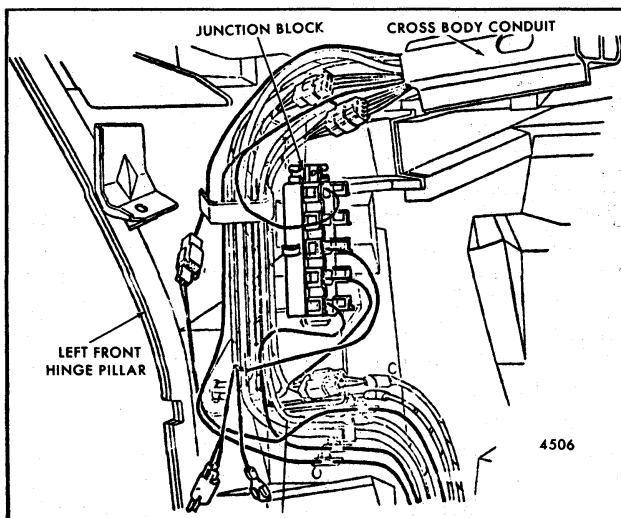


Fig. 10-25 - Accessory Junction Block

3. If tester does not light, there is no current at end of feed wire. Failure is caused by an open or short in feed circuit.

Check Feed Circuit Continuity at Seat Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other test lead to body metal.
2. If tester does not light, there is an open or short circuit between switch and power source.

Checking Seat Control Switch

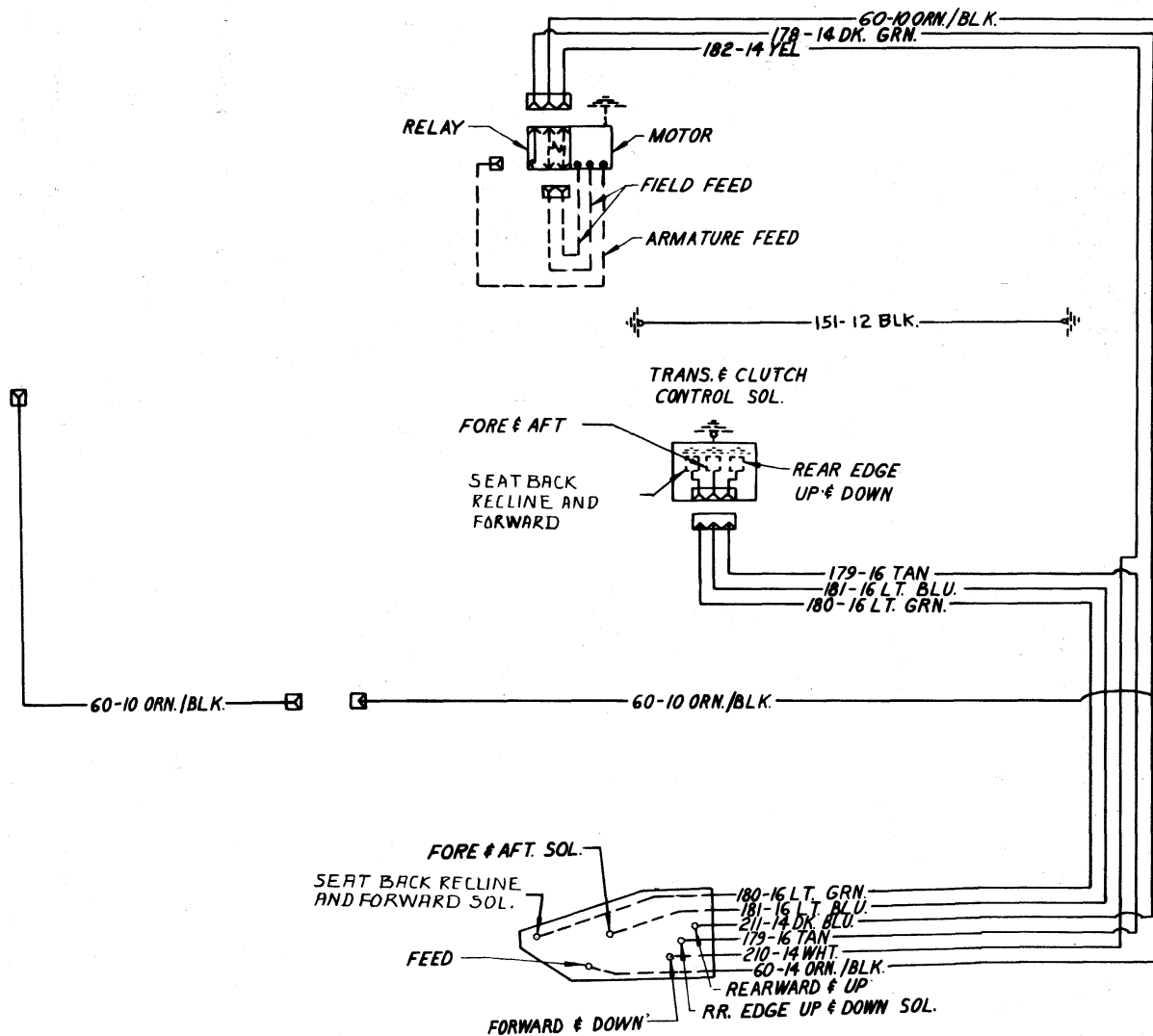
NOTE: In the following operations which specify the seat control switch to be actuated, a switch that has been checked for proper operation may be connected to the switch block. If a switch is not available, a three-way jumper wire can be made to perform the switch function. The jumper wire and the switch locations to be connected to obtain a specific movement of the seat are shown in Figure 10-27. If a jumper wire is used, letter the locations on the switch block as indicated in the illustration. Details outlining the making and use of the jumper wire follow the checking procedure.

1. Obtain switch or jumper wire and connect to switch block.
2. Operate switch. If adjusters and recliner operate with new switch or jumper wire, but did not operate with original switch, the original switch is defective.
3. Check all movements of seat adjuster and recliner.

Checking Wires Between Control Switch and Motor Relay

1. Disengage triple harness connectors from relay at motor.
2. Insert one test light lead into motor field (white or dark blue wire) connector slot on harness and ground other lead.
3. Actuate seat switch to energize field wire being tested.
4. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch. Check other motor field wire in the same manner.

Fig. 10-26 - Four-Way Power Seat and Recliner Circuit Diagram



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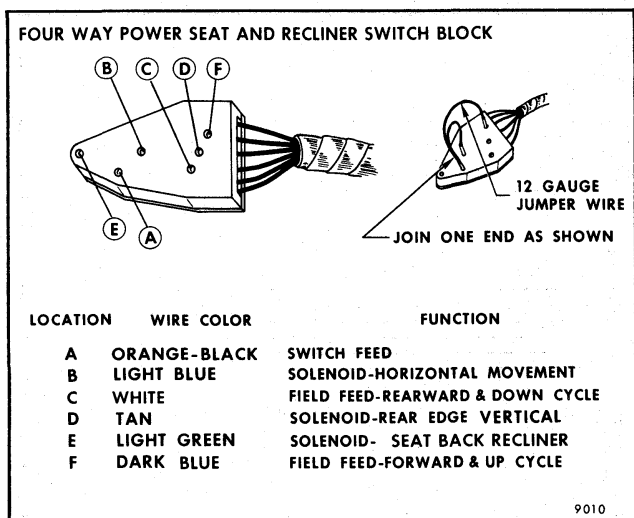


Fig. 10-27 - Four-Way Seat and Power Recliner Switch Block in Seat Side Panel

Checking Motor Control Relay

1. Disconnect three motor leads (double and single connector) from relay assembly. These are wires leading from the motor to relay (Fig. 10-28).
2. Connect one end of a jumper wire to one of motor field feed studs on relay and ground other end of the jumper wire.
3. Connect one end of test light to motor armature feed stud on relay and ground other tester lead.
4. With a jumper wire, energize field stud which is not grounded. If tester does not light, relay is defective.

Checking the Motor Assembly

1. Check seat ground wire attachment for proper ground.
2. Disconnect motor armature feed wire and motor field feeds from relay assembly.
3. With a jumper wire, energize armature feed and one of field feeds.
4. If motor does not operate, it is defective. Check other motor field wire in same manner.

Checking the Wire Between Solenoid and Switch

1. Disengage harness connector from transmission.

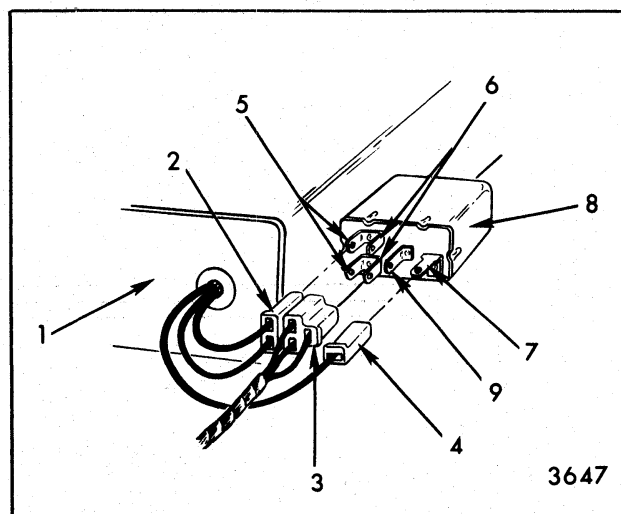


Fig. 10-28 - Seat Adjuster Motor Control Relay

- | | |
|--------------------------------------|---------------------------|
| 1. Seat Adjuster Motor | 5. Motor Field Feed Studs |
| 2. Motor Field Connector | 6. Relay Coil Studs |
| 3. Control Switch to Relay Connector | 7. Armature Feed Stud |
| 4. Motor Armature Connector | 8. Motor Control Relay |
| | 9. Relay Input Stud |
2. Connect one test light lead to end of harness wire being tested and ground other lead.
 3. Operate switch to energize wire being tested. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch.
 4. Check other wires between solenoid and switch in same manner.

Checking Solenoids

1. Check seat ground wire attachment for proper ground.
2. Energize solenoid being checked with jumper wire.

NOTE: If solenoid is functioning, a "click" should be heard when solenoid is energized.

CAUTION: To prevent damaging solenoid, do not energize solenoid for more than one minute.

3. With solenoid energized, actuate seat control switch to energize adjuster motor.
4. If adjusters do not operate, and there is no mechanical failure in seat unit, solenoid is defective.

Three-Way Jumper Wire for Checking Seat Switch

To make jumper wire, obtain two pieces of No. 12 gauge wire, each 4-1/2" long, join one end of each wire as shown in Figure 10- 27. The joined end can be inserted in the feed location in the switch block; one of the remaining ends can be inserted into one of the field locations in the switch block; the other end can be inserted into one of the solenoid locations.

NOTE: To obtain a seat movement using a 3-way jumper wire at the switch block, the switch feed location, one of the motor field wire locations and one of the solenoid locations must be connected simultaneously.

1. To move seat back forward, place jumper in locations A, C and E.
2. To recline seat back, place jumper in locations A, F and E.
3. To move seat forward, place jumper in locations A, B and C.
4. To move seat rearward, place jumper in locations A, B and E.
5. To raise rear edge of seat, place jumper in locations A, F and D.
6. To lower rear edge of seat, place jumper in locations, A, C and D.

DIAGNOSIS CHART - FOUR-WAY SEAT WITH ELECTRIC RECLINER

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat adjuster motor does not operate	A. Short or open circuit between source or switch and motor. B. Defective motor.	Check circuit from power source and switch to motor to locate problem.
2. Seat adjuster motor operates, but one or more functions of seat adjuster and/or recliner does not operate.	A. Short or open circuit between switch and affected solenoid. B. Defective solenoid.	A. Check circuit from switch to solenoid to locate problem. B. Check solenoid. If defective, repair or replace as required.
3. Seat adjuster motor operates, but seat adjusters and recliner only operate in one direction.	A. Short or open circuit between one of the motor field wires and seat control switch. B. Defective field coil in motor.	A. Check circuit between affected motor field wire and seat switch. B. Check motor. If defective, repair or replace as required.

POWER OPERATED SUN ROOF - "A-37 and 57" Styles

DESCRIPTION

Power sun roofs are operated by a two-way 12 volt series wound motor, with an integral drive gear mechanism, and two flexible drive gear cables. The motor is mounted to the roof panel, forward of the sun roof opening near the center of the windshield header area.

Electrical power for the system is supplied from a fuse panel mounted 40 amp circuit breaker to an accessory junction block located on the reinforcement at the left shroud. The wiring is then routed from the junction block to an ignition relay also mounted on the left shroud panel (Fig. 10-29).

A relay is used in the circuit to prevent operation of the sun roof until the ignition switch is turned "ON". A circuit breaker is used to protect the complete circuit.

NOTE: On styles equipped with power windows, the sun roof and windows use a common relay and circuit breaker (Fig. 10-29).

The wiring is then routed from the relay up the left pillar and across the header to a two position control switch located on the header pad.

POWER SUN ROOF CIRCUIT CHECKING PROCEDURE

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Be sure to check the harness connectors for proper engagement and become familiar with the typical circuit diagrams (Fig. 10-29).

Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.
2. To check circuit breaker, disconnect the output feed wire (the wire opposite the power source feed to the breaker) from the breaker and with test light, check terminal from which wire was

disconnected. If tester does not light, circuit breaker is inoperative.

Checking Ignition Relay Assembly

1. With test light, check relay feed (orange/black wire). If tester does not light, there is an open or short circuit between relay and circuit breaker.
2. Turn ignition switch "ON" and with test light check output terminal of relay (red/white wire).

If tester does not light:

- a. Put test light on ignition relay coil terminal (pink or orange).
- b. If tester lights, replace ignition relay.
- c. If tester does not light, locate short or open circuit along pink or orange wire (check fuse at dash panel).

Checking for Current at Control Switch

1. With ignition switch "ON", connect one test light lead to the control switch feed terminal (red/white stripe) of the switch block and ground other test lead.
2. If tester does not light, there is an open or short circuit between the relay and control switch.

Checking Control Switch

1. Connect one end of a No. 12 gauge jumper wire to the red and white switch feed wire and other end to light green motor feed wire. Using a second jumper wire, connect the black motor feed wire with the black switch ground wire.
2. If the motor operates with the jumper wires, but does not operate with the switch, either the switch is improperly grounded or the switch is defective.

Checking Wires Between Control Switch and Motor

1. Disengage harness connectors from motor.

2. Connect one end of a test light to ground and insert other end into one of the two motor feed wires.
3. Actuate control switch, if test lamp does not light when switch is actuated, there is an open or short circuit between the control switch and motor connector.
4. Check other motor feed wire, as outlined in step 3.

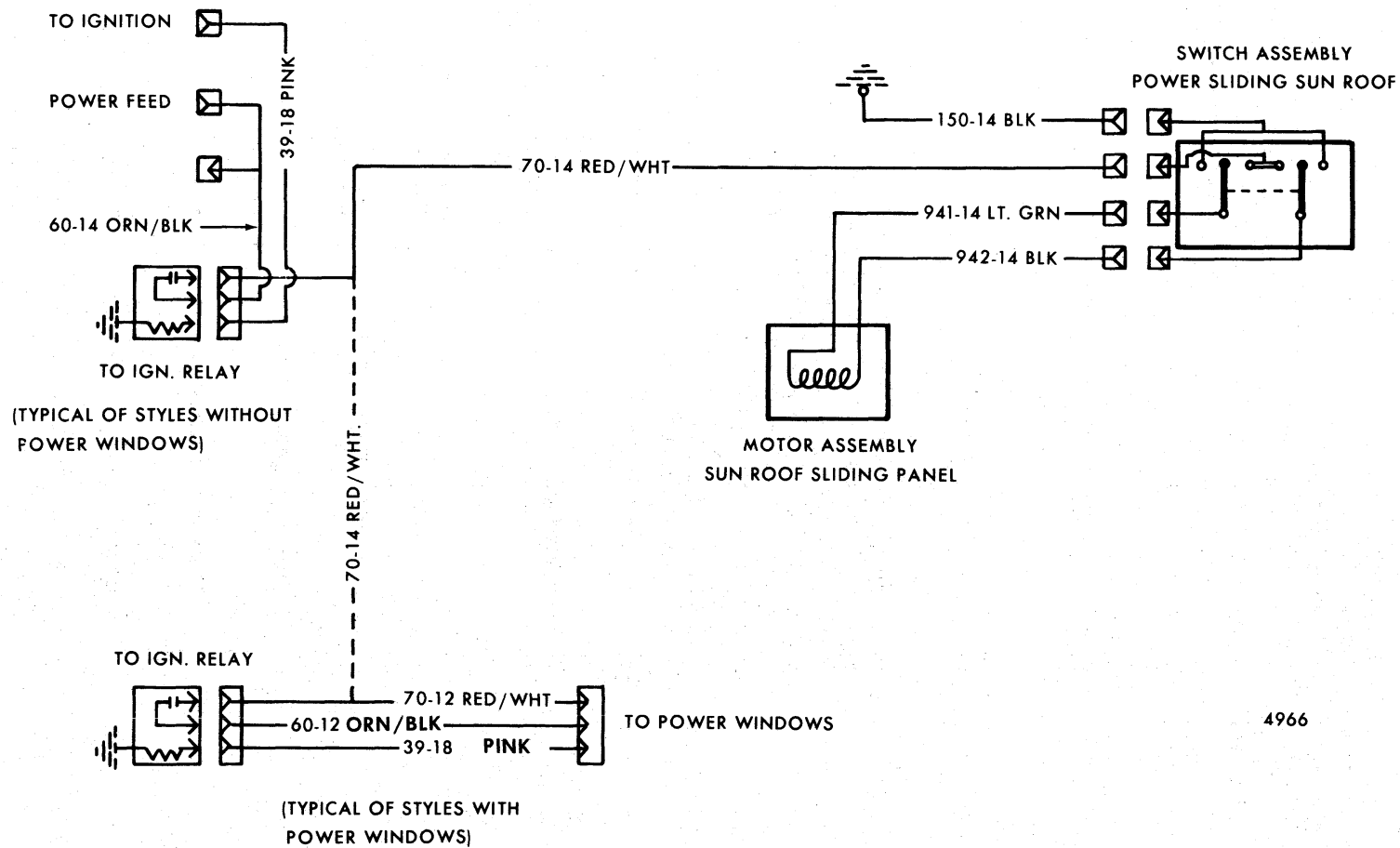
Checking Sun Roof Motor

1. Disengage harness connector from motor.
2. Connect one end of a test light to ground and insert other end into one of the two motor feed wires.
3. Actuate control switch, if test lamp lights when switch is activated, either the control switch is improperly grounded or the motor is defective.

DIAGNOSIS CHART

The following typical conditions and corrections have been listed as an aid for eliminating electrical problems in the power sunroof electrical circuit. It should be noted that multiple problems in the circuit may lead to a combination of conditions, each of which must be checked separately.

CONDITION	APPARENT CAUSE	CORRECTION
1. Sun roof will not operate with ignition switch on.	<p>A. Short or open circuit in power feed circuit.</p> <p>B. Defective circuit breaker.</p> <p>C. Defective ignition relay.</p> <p>D. Defective control switch.</p> <p>E. Defective motor.</p> <p>F. Possible mechanical failure and binds.</p>	<p>A. Check harness connectors.</p> <p>B. Check feed circuit wires for possible short or open circuit.</p> <p>C. Check ground at control switch.</p> <p>A. Check circuit breaker operation.</p> <p>A. Check ignition relay operation.</p> <p>A. Check control switch operation.</p> <p>A. Check motor operation.</p> <p>A. Refer to index for sun roof removal, and installation and adjustment procedures.</p>



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Fig. 10-29 - Sun Roof Circuit Diagram - "A-37 and 57" Styles

EXTERIOR AND INTERIOR LAMPS

TAIL LAMPS AND SIDE MARKER LAMPS

All styles incorporate rear quarter side marker lamps which operate in conjunction with the tail lamp circuit. On "H" styles, all rear lamps are grounded adjacent to the right rear marker lamp except the left rear marker lamp, which has a separate ground adjacent to the lamp. Refer to the appropriate rear harness circuit diagram located at the end of this section when checking for open or short circuits in tail lamps and/or side marker circuitry.

DOME AND SAIL LAMPS

The dome lamp operates in conjunction with the door jamb switch and/or the headlamp switch. Feed current is present at the dome lamp at all times and a ground is established through one of the switches. The "grounding" type door jamb switches are located in the front body hinge pillars and on some styles in the center pillar. The dome lamp harness, which contains two solid core wires both color coded white, is connected to the front body harness aft connector.

On "H" styles, the two solid core wires are color coded gray and the jamb switch wiring is color coded white and black. These are connected to the front body front harness connector.

The jamb switch wiring and jamb switch on "F-X" styles, as well as the headlamp switch on all styles, are installed by the Motor Divisions. The portion of the dome lamp circuit contained in the main body harness is color coded (orange-feed wire and white-ground wire). The circuit diagrams are at the end of the Electrical Section.

ILLUMINATED LOCK CYLINDER AND COURTESY LIGHT - Oldsmobile "B- C" and Cadillac "C-D-E" Styles

The optional illuminated door lock cylinder at each front door outside handle operates in conjunction with the interior courtesy lamps and door jamb switches. When the door handle push button is depressed an in-line bulb, located behind the front door trim assembly, and the interior lamps come on. Magnified light is transferred from the in-line bulb through a fiber optic harness to a lens located above the door lock cylinders. The light is then directed through the lens, illuminating the lock cylinder face. The interior and lock cylinder lights are controlled by a time delay relay mounted behind the left shroud trim panel which allows the lights to remain on either for a period of 30 seconds or until the ignition switch is turned on. The feed circuit is protected by a 20 amp (courtesy lamp) fuse. Refer to Figure 10-30 for appropriate circuit diagram.

Access to the in-line bulb on Oldsmobile "C" and Cadillac "C, D and E" styles can be gained by removing the door pull handle opening cover or cup. On Oldsmobile "B" styles, remove the door trim panel.

ELECTRONIC LAMP MONITORING SYSTEM-Oldsmobile "B, C and E" Styles

The optional electronic lamp monitor incorporates an instrument panel mounted indicator lamp, front and rear wire harness and monitoring unit (located in the rear compartment). In the event of an exterior lamp failure, the indicator lamp lights. A physical inspection is then required to determine the location of the failure. Refer to Figures 10-31 through 10-35 for the appropriate circuit diagram.

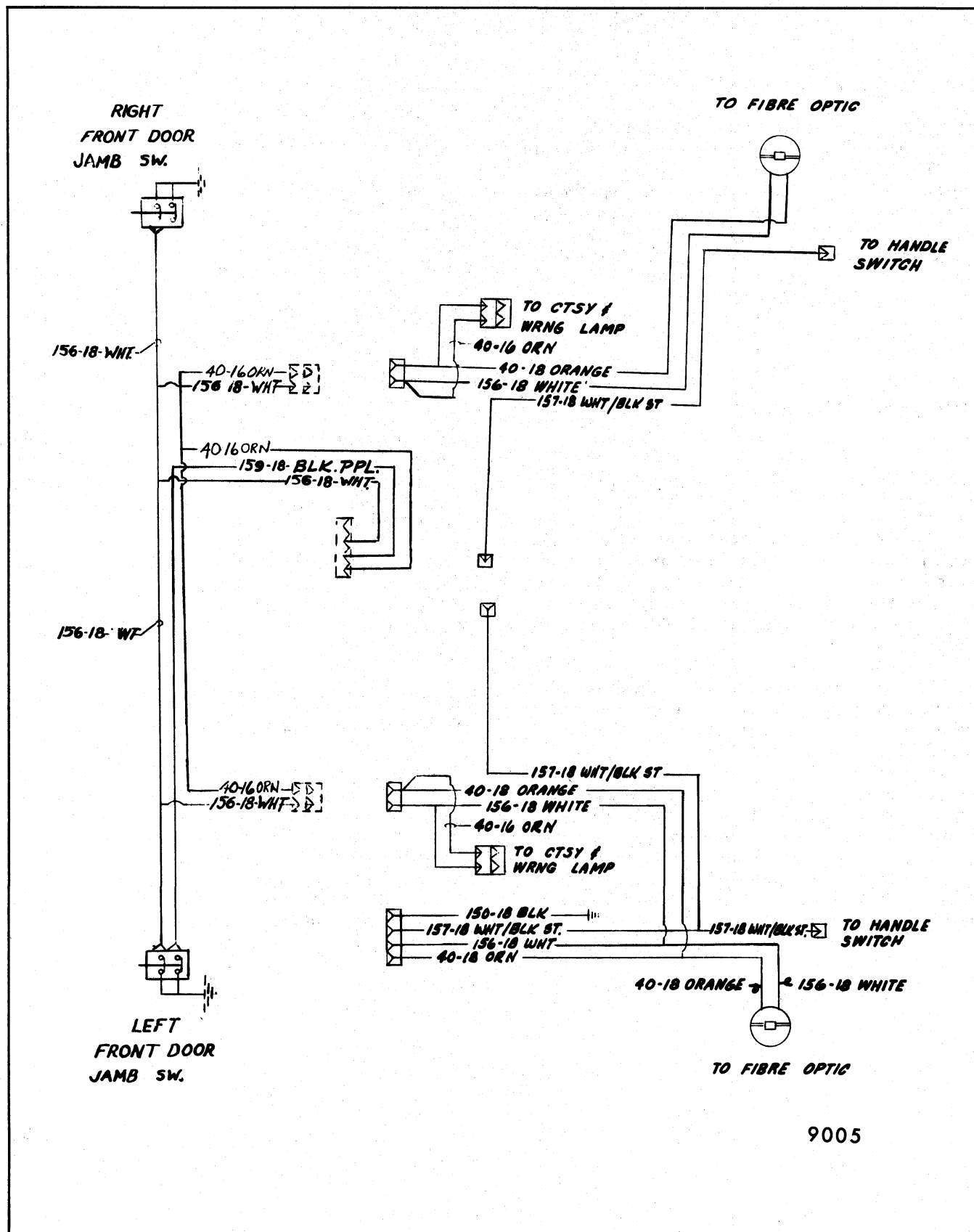


Fig. 10-30-Illuminated Lock Cylinder and Courtesy Light Circuit Diagram

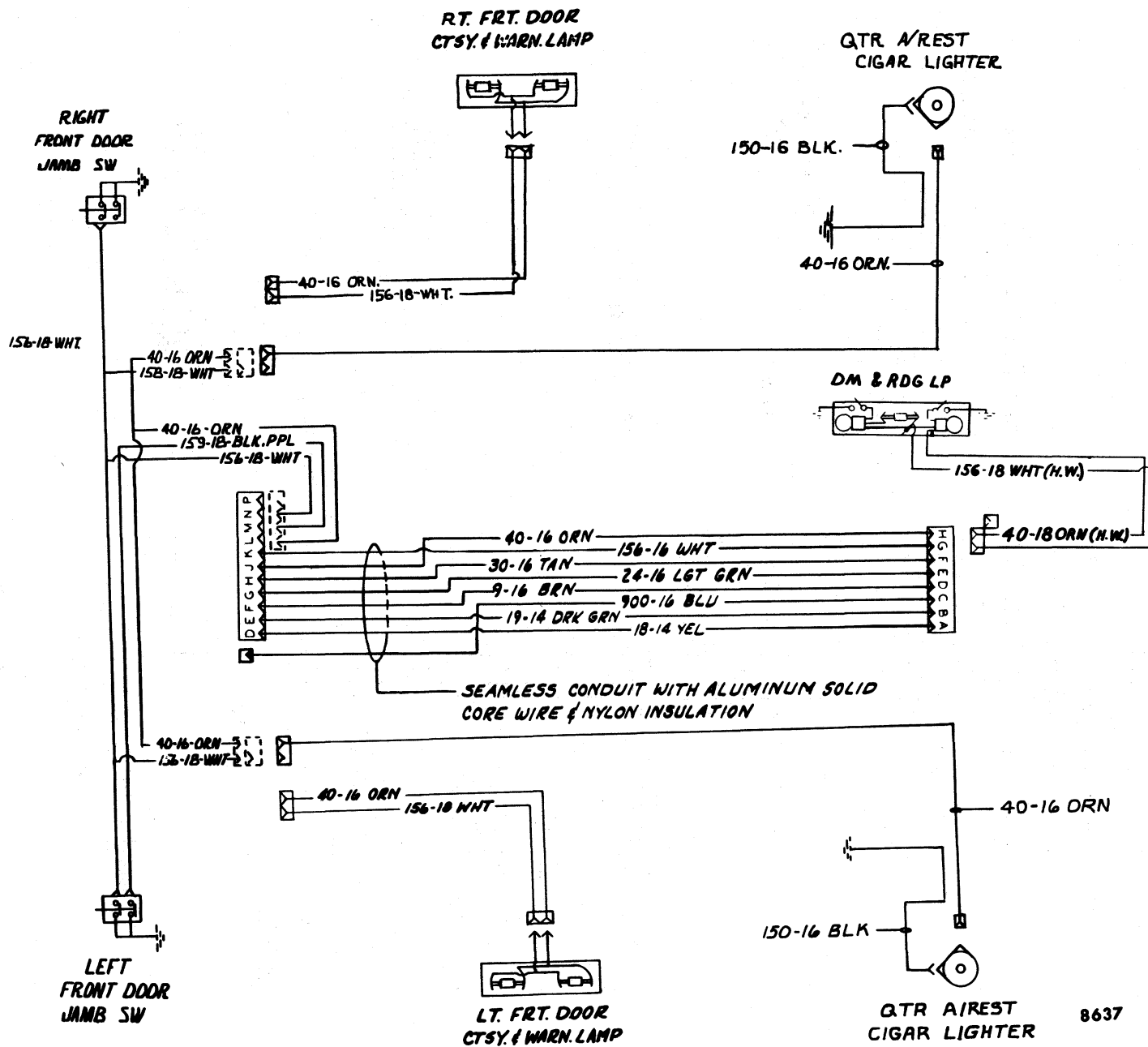
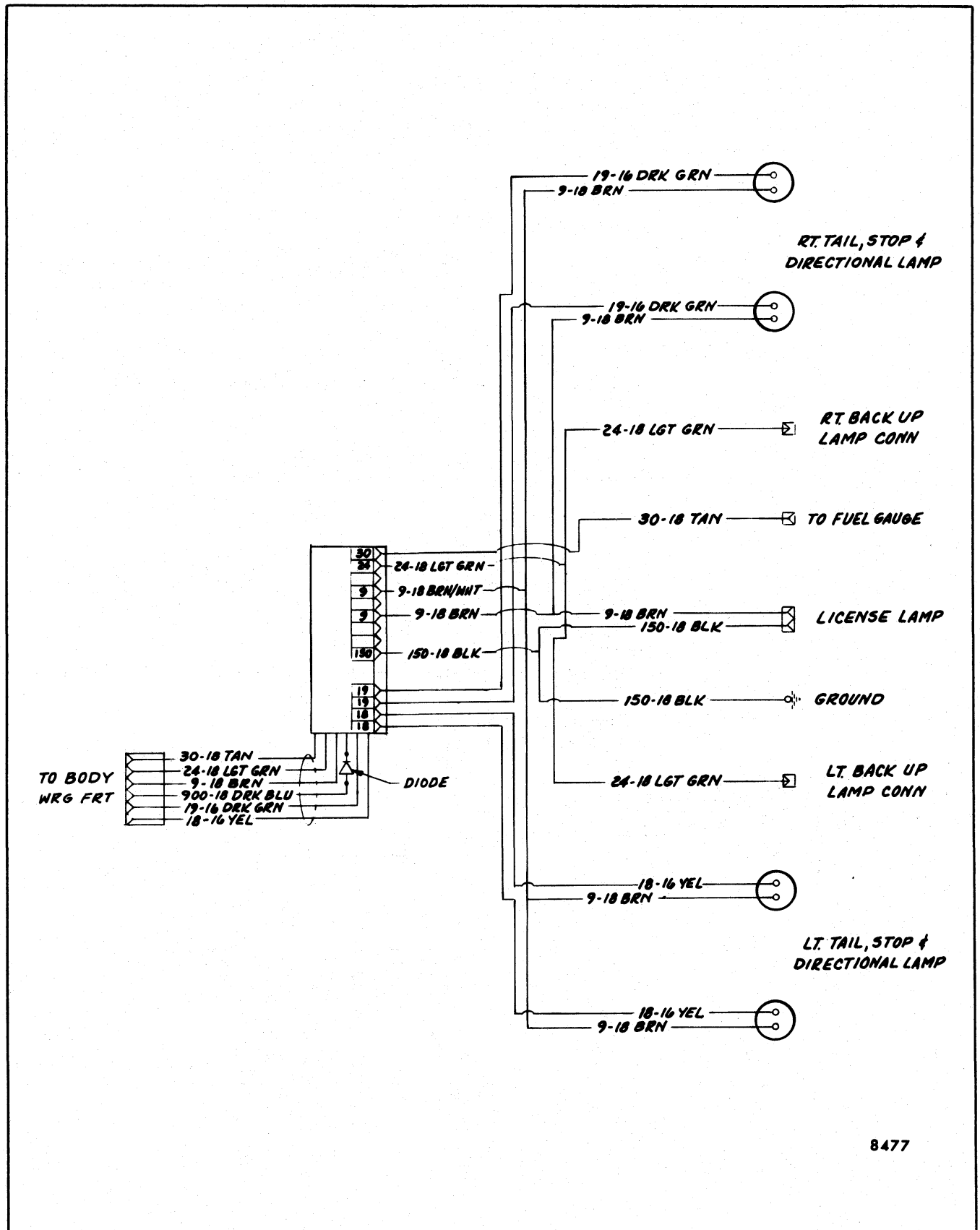


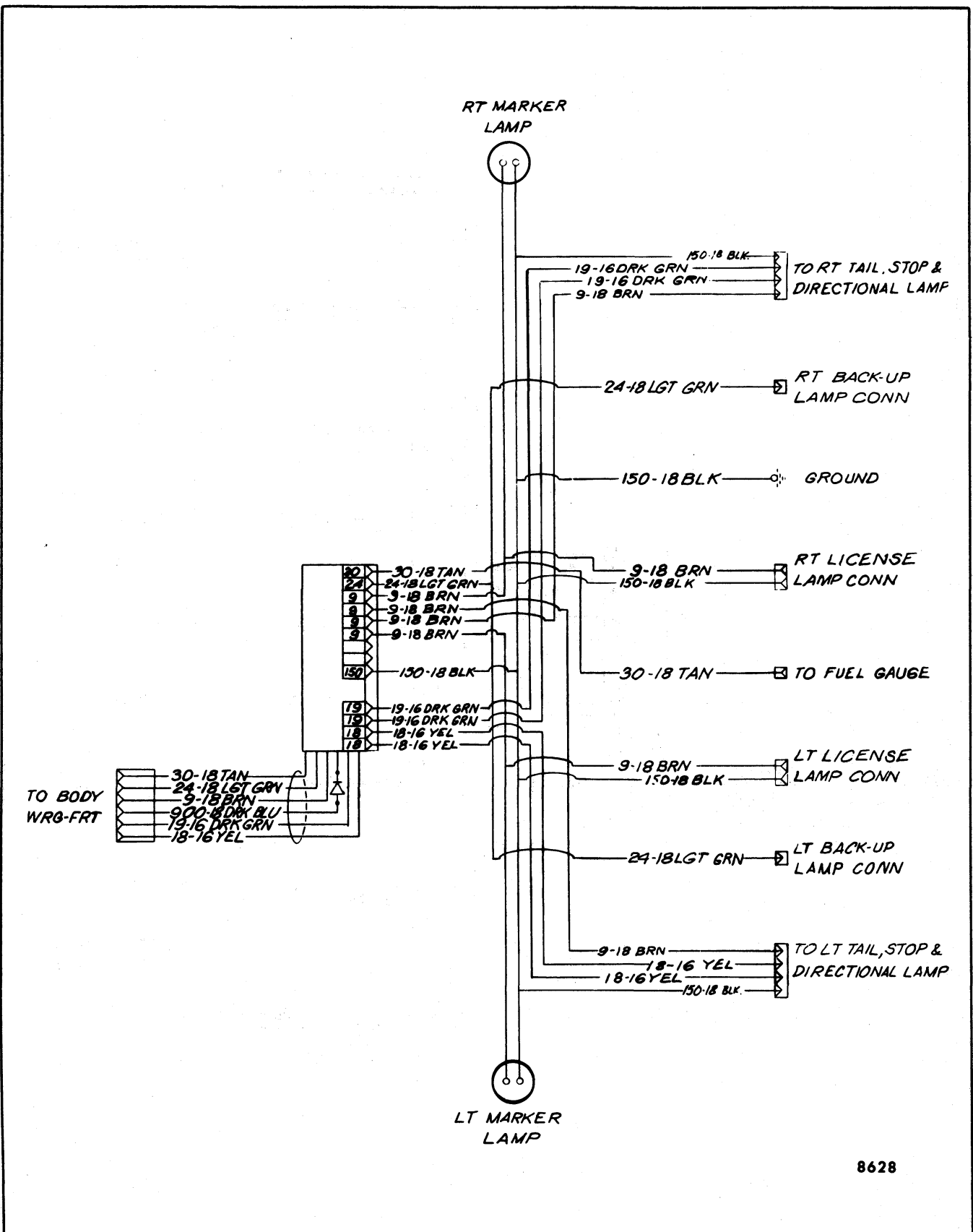


Fig. 10-32-Electronic Lamp Monitoring System - Rear Harness Circuit Diagram - Oldsmobile "B-35 and 45" Styles



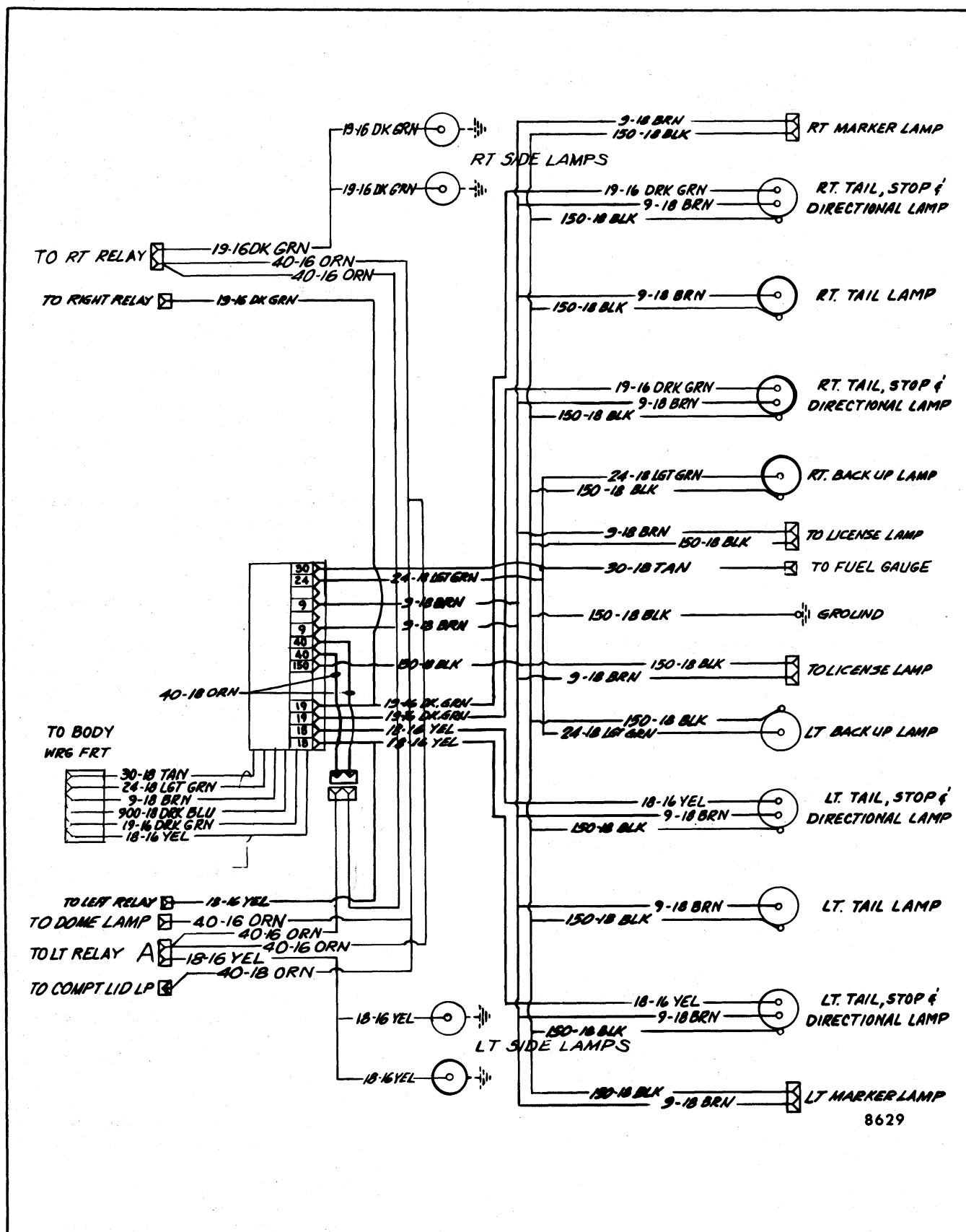
8477

Fig. 10-33-Electronic Lamp Monitoring System - Rear Harness Circuit Diagram - Oldsmobile "B-39,57 and 69" Styles



8628

Fig. 10-34-Electronic Lamp Monitoring System - Rear Harness Circuit Diagram - Oldsmobile "C-37 and 39" Styles



8629

Fig. 10-35-Electronic Lamp Monitoring System - Rear Harness Circuit Diagram - Oldsmobile "E-47 and 57" Styles

POWER DOOR LOCKS

ELECTRIC DOOR LOCKS (LESS AUTOMATIC DOOR LOCKING SYSTEMS)

The optional electric door lock system incorporates a solenoid for each door and a control for each front door except Pontiac "F" styles which have one instrument panel switch. All doors lock and unlock electrically from the control switch or manually from each door in the conventional manner. Each solenoid has an internal circuit breaker which (under extreme conditions) may require up to three minutes to reset.

The door lock harness is routed in the power window harness conduit.

Checking Procedure - All Except Pontiac "F" Styles

Before beginning electrical checks, be sure system is free of mechanical binds. Refer to Figures 10-36 and 10-38 for circuit diagrams. The following checks are performed with a test lamp.

Junction Block Output - "A-B-C-E-X" and Chevrolet "F" Styles

1. Insert test prod into junction block output terminal.
 - a. If lamp does not light, check power feed jumper to junction block.
 - b. If lamp lights, check feed wiring for open or disconnect in circuit.
 - c. If lamp blinks (circuit breaker clicking on and off), locate and repair short circuit in feed wiring.

NOTE: Disconnect other options to isolate shorted circuit, if applicable.

2. Disconnect feed connector (orange/black, dark green and black wires) and insert test lamp prod feed (orange/black) terminal.

If no light, locate and repair short or open in feed circuit.

Door Lock Control Switch

1. Insert test lamp prod into feed terminal of switch block.

If lamp does not light, locate and repair open or short circuit in orange/black wire.

2. Insert jumper between feed and lock (unlock) terminals. If locks operate in both cycles, replace switch.

Front and/or Rear Door Lock Solenoid

1. Remove door trim panel.
2. Disconnect solenoid connector.
3. Insert test lamp prod into connector.
 - a. If lamp lights at both terminals when switch is activated and solenoid is properly grounded, replace solenoid.
 - b. If lamp does not light at both terminals, locate and repair open or short circuit in black or dark green wire.

Checking Procedure - Pontiac "F" Styles Only

Prior to beginning electrical checks, insure that no mechanical binds exist. The electric door lock circuit diagram is shown in Figure 10-39. The following electrical checks are performed with the test lamp.

Door Lock Control Switch

1. Insert test prod into feed wire insulation at switch base.

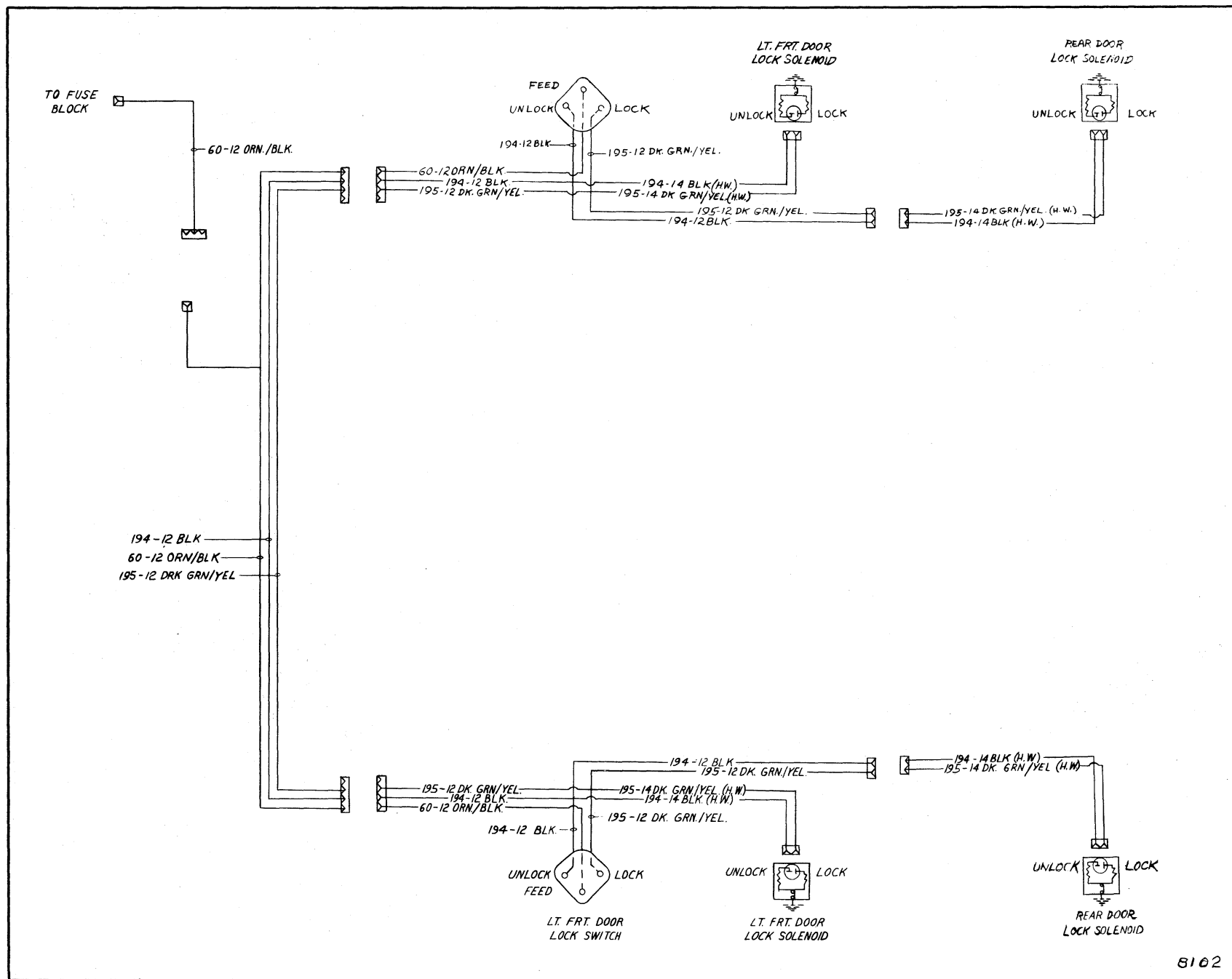
If lamp does not light, locate and repair open in feed wire from circuit breaker.
2. Disengage door lock switch jumper harness connector (black and dark green wires) from door lock center harness connector.
3. Insert test lamp prod into each terminal of switch jumper harness connector (black wire-unlock and dark green wire-lock) and activate switch accordingly.

If lamp does not light at both terminals, locate and repair open wire or replace switch.

Door Lock Center Harness

1. Remove left shroud side finishing panel and disengage door lock center harness from door lock solenoid harness.

Fig. 10-36-"A and X" Style Electric Door Lock Circuit Diagram



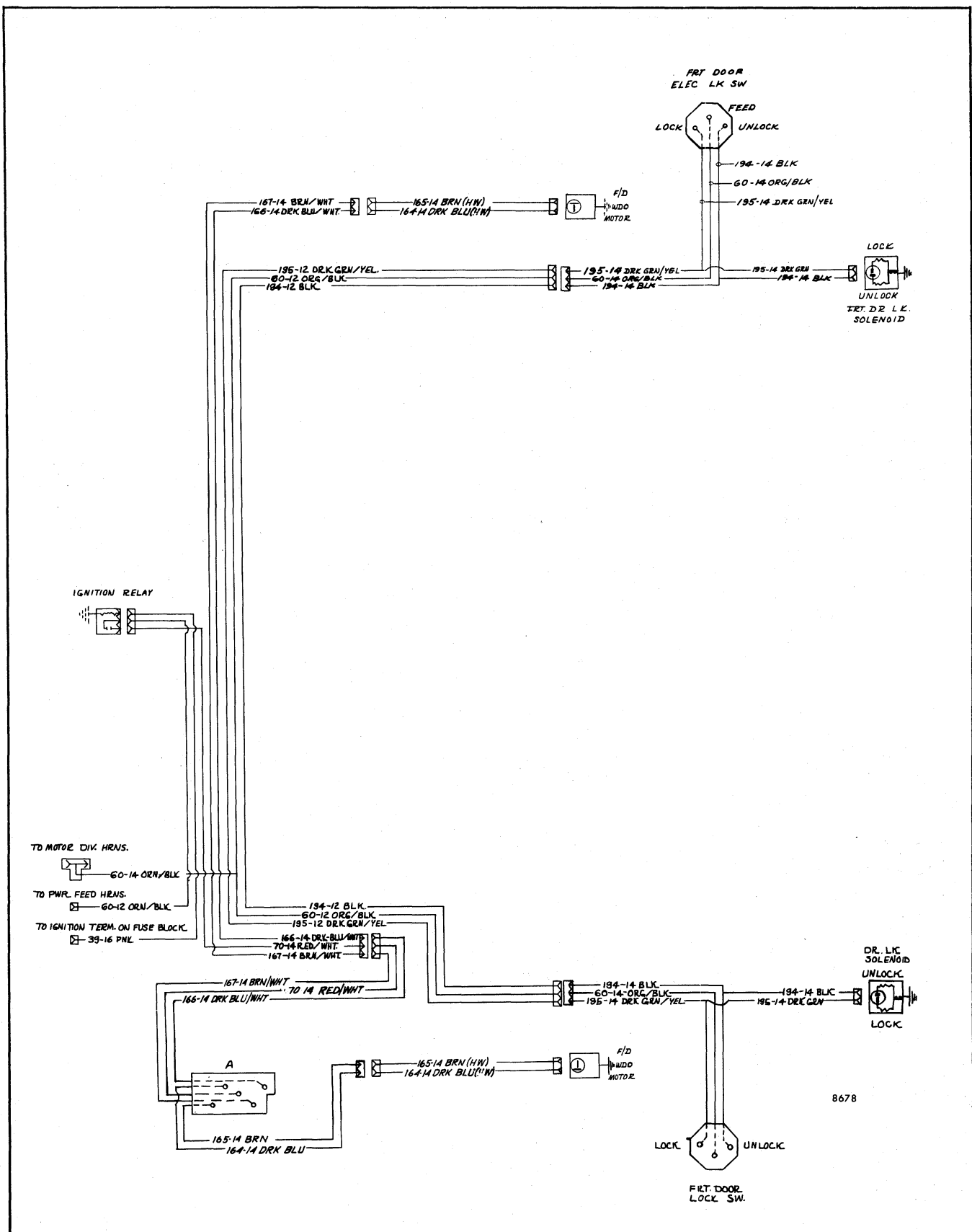


Fig. 10-37-Power Window and Electric Door Lock Circuit Diagram - Chevrolet "F" Style



Fig. 10-39-Power Window and Electric Door Lock Circuit Diagram - Pontiac "F" Styles

2. Connect a jumper wire from the circuit breaker output at fuse block to door lock center harness feed connector.
3. Insert test lamp into corresponding terminal at left shroud side connector.
 - a. If lamp does not light, locate and repair open or short circuit.

NOTE: Circuit breaker will "click" open and closed if short circuit exists.

 - b. If lamp lights, repeat steps 2 and 3 for other terminals.
4. If lamp lights at both terminals at left shroud, repeat steps 1, 2 and 3 at right shroud side panel.

Door Lock Solenoid and Solenoid Harness

1. Remove door trim pad and disengage solenoid harness from solenoid.
2. Connect a jumper wire from the circuit breaker output at fuse block to one terminal of solenoid. Repeat at other terminal.
 - a. If solenoid operates in both functions, locate and repair open or short circuit in door lock solenoid harness.
 - b. If solenoid does not operate in both functions and no mechanical binds exist, replace solenoid.

NOTE: Prior to solenoid replacement, insure that solenoid body is properly grounded.

AUTOMATIC DOOR LOCKING SYSTEM (CADILLAC STYLES)

With all doors closed, courtesy lamps off and the ignition switch on, the automatic door locking system locks all doors when the driver is seated and the selector lever is moved to drive.

With the selector lever in park, neutral, or reverse, each front door will automatically unlock when the inside door handle is pulled. Also, if the selector lever is in drive and a passenger unlocks any door manually or all doors from the control switch in the front door armrest and then exits the vehicle, all doors will automatically relock when the door is closed.

The automatic system consists of the following components which are interconnected with the regular

electric door lock harnesses, solenoids and switches (Fig. 10-40).

- A. Electronic logic module
- B. Two unlock relays
- C. Lock relay
- D. Back-up lamp switch
- E. Right and left front door lock remote control handle switches
- F. Seat sensor switch (driver's side only)

NOTE: On styles equipped with automatic door locks, the electric door locks operate in the conventional manner from the door armrest control switches.

Electronic Logic Module

The electronic module is located under left side of the instrument panel and is attached to the center duct panel, Figure 10-41. The logic module is serviced as two separate assemblies: the module housing with harness and the printed circuit board.

NOTE: To gain access to the module assembly and lock relay to perform diagnostic procedures, first remove the lower left steering column cover, then remove module bracket attaching screw and pull module downward. If it becomes necessary to detach the lock relay be sure to re-establish external ground for the relay before attempting any diagnosis.

CAUTION: Remove body fuse before disengaging printed circuit board from module housing.

To remove printed circuit board from module housing disengage locking tab on housing; then insert small screwdriver or awl into hole at edge of printed circuit board, and pry outward.

To install printed circuit board, insert into housing and carefully press inward until terminals are fully engaged.

Unlock Relays

Unlock relays are taped to module housing as shown in Figure 10-41. Also, relays are serviced as an assembly only.

Lock Relay

Lock relay is attached to left shroud inner panel beside junction block, as shown in Figure 10-41, and is serviced as an assembly.

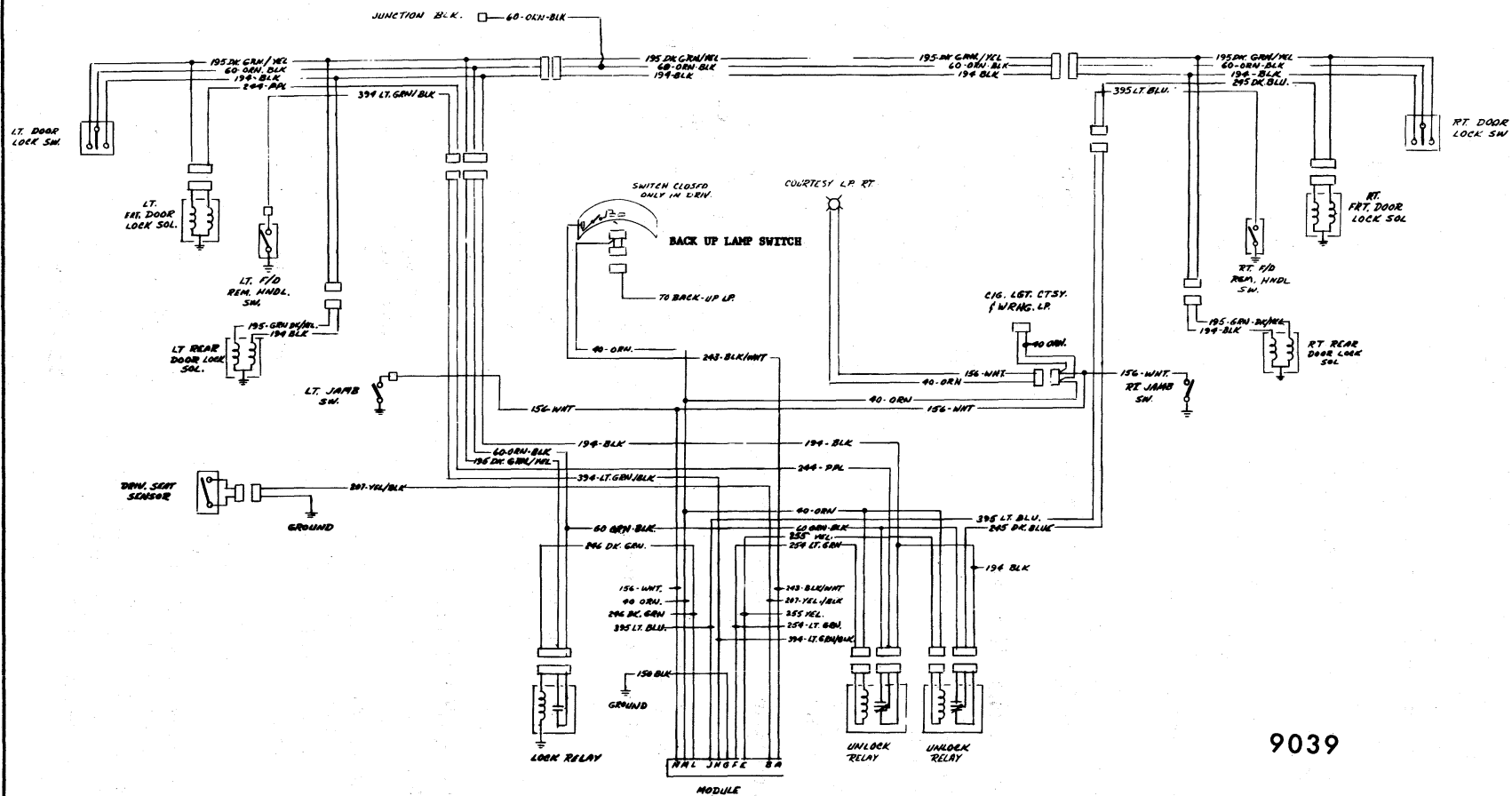
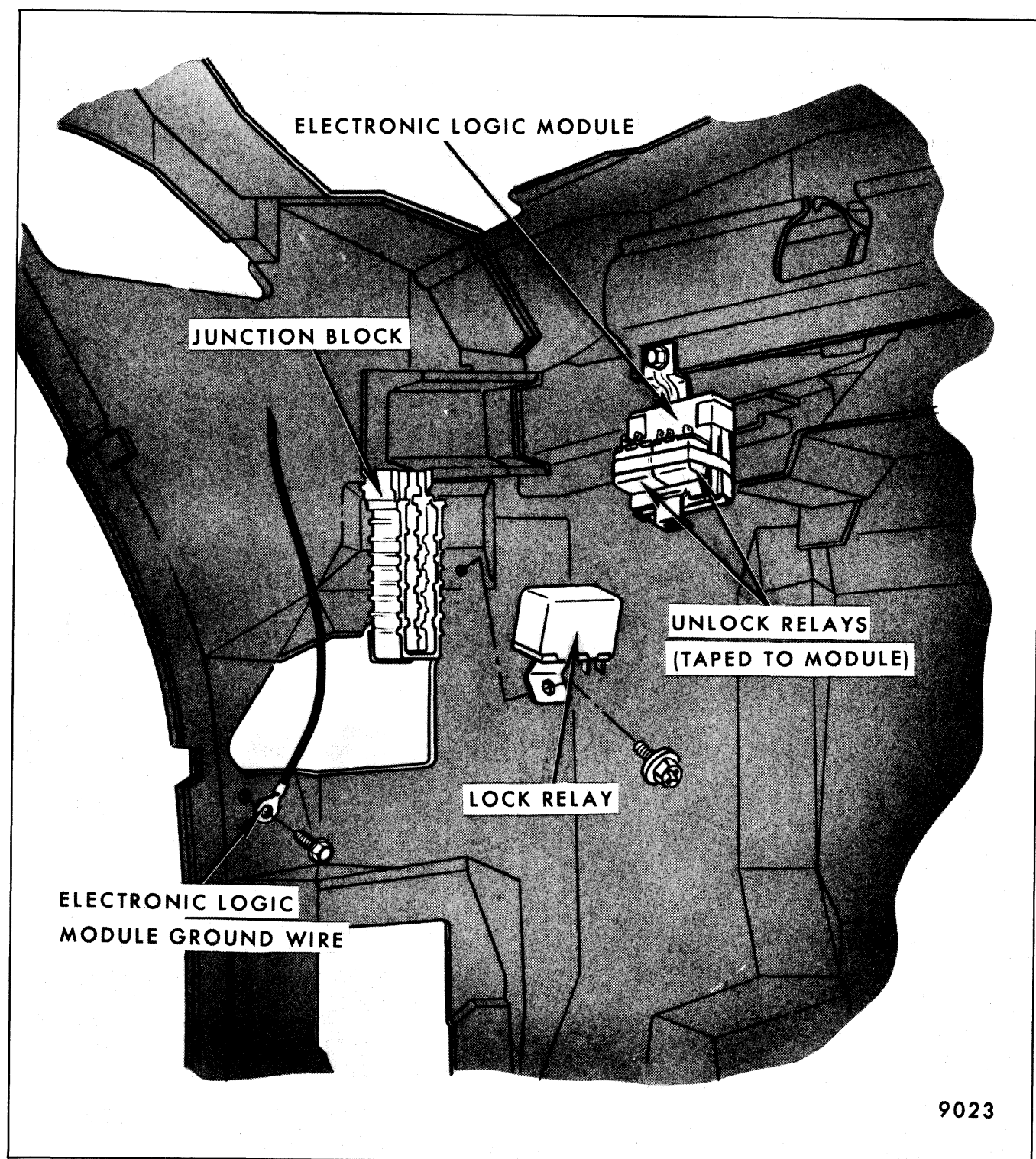


Fig. 10-40 - Automatic Door Lock Circuit Diagram (Cadillac Styles)



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Fig. 10-41 - Automatic Door Lock Module and Relay Installation (Cadillac Styles)

Back-up Lamp Switch

The back-up lamp switch is attached to lower end of steering column. For service information, refer to Car Division Service Manual.

Front Door Lock Remote Control Handle Switch

The front door lock remote control handle switch is installed at the base of the front door inside handle (Fig. 10-42).

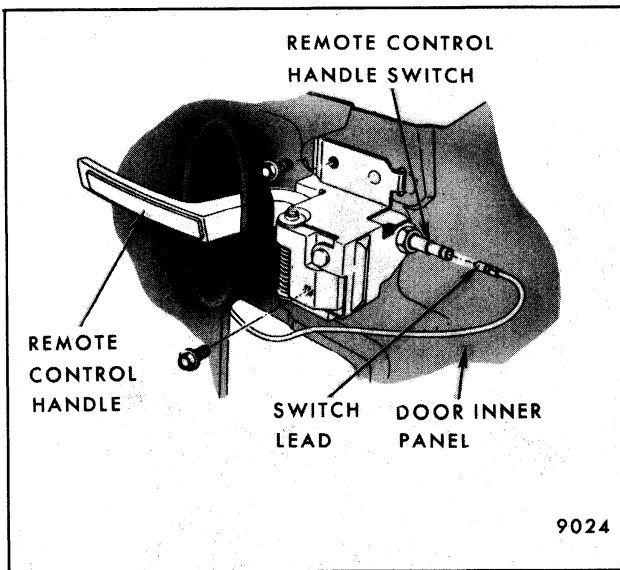


Fig. 10-42 - Automatic Door Lock Remote Control Switches
(Cadillac Styles)

NOTE: Remove upper and lower door trim panels to gain access to switches.

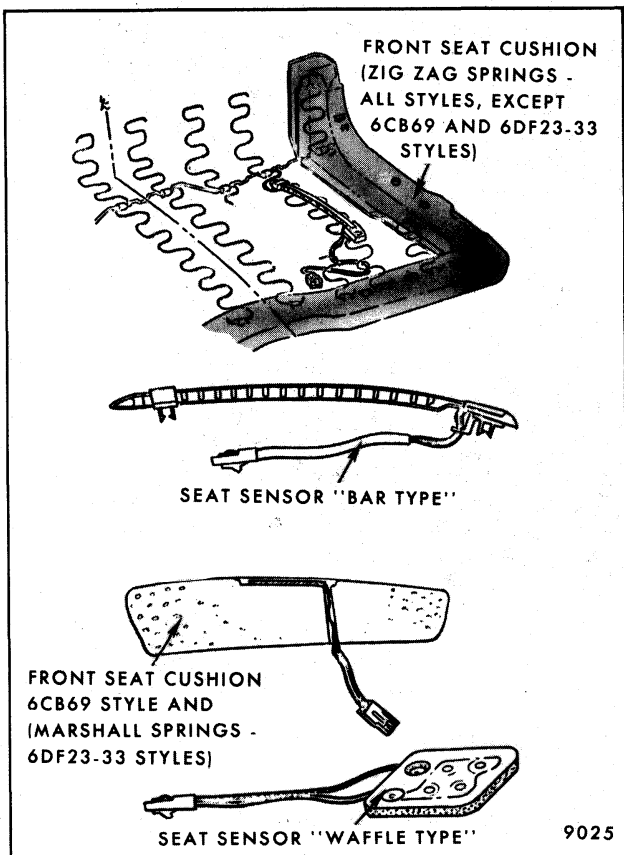


Fig. 10-43 - Automatic Door Lock Seat Sensor Switches
(Cadillac Styles)

Seat Sensor Switch (Driver's side only)

Two types of seat sensor switches (bar and waffle) are used with the automatic locking system. The bar type is used on Cadillac "C-69" styles. The waffle type is used on all other Cadillac styles (Fig. 10-43).

DIAGNOSTIC PROCEDURES

Diagnosis charts (Figs. 10-47 through 10-53) have been provided as an aid for eliminating problems in the Automatic Door Lock System. It should be noted that multiple problems in the system may lead to a combination of conditions, each of which must be checked separately. Also, functional relay tests (Figs. 10-54, 10-55 and 10-56) have been provided to determine if the relays are functioning normally.

NOTE: The relay functional tests should be used "only" when condition No. 7 or No. 8 exists, or when specified within a diagnosis procedure that is being performed.

The diagnostic procedures and relay functional tests are based on certain failure modes which result in a specific malfunction. Therefore, the manner in which the system is operating should be observed before referring to the conditions listed in the diagnosis chart index (Figure 10-44) and selecting the appropriate diagnosis procedure.

Two types of test lamps are used when diagnosing problems with the automatic door lock system (Figure 10-45).

1. Self-powered 1.5 volts battery test lamp (tool J-2100 or equivalent).
2. Twelve volt continuity test lamp.

NOTE: It is important that the proper test lamp be utilized as indicated in the diagnosis charts when making continuity and operational checks of the module and relay assemblies. Figure 10-46 has been provided as an aid for determining proper probe locations when performing these tests.

AUTOMATIC DOOR LOCKING SYSTEM (Buick "C and E" Styles)

The system consists of a front door lock cylinder key switch (driver's side only), electronic logic module, starter safety switch, locking relay and an unlocking relay. The electronic module is serviced as two separate assemblies: module housing and harness, printed circuit board. All other components are serviced as complete assemblies. Location of the components and module ground wire are shown in Figure 10-57.

CONDITION	REFERENCE	CONDITION	REFERENCE
1. Automatic door locks inoperative but doors lock and unlock from control switches in door armrests.	Fig. 10-47	5. Doors lock automatically when driver's seat is not occupied and selector lever is moved to drive.	Fig. 10-51
2. Doors do not lock automatically when selector lever is moved to drive. But lock and unlock from switches in armrests. Also, doors unlock automatically by actuating either remote control handle.	Fig. 10-48	6. Doors lock automatically with door(s) open when selector lever is moved to drive.	Fig. 10-52
3. Doors lock automatically, but <u>left</u> door does not unlock when actuating left door lock remote control handle.	Fig. 10-49	7. Doors lock and unlock automatically but <u>right</u> front door does not unlock from control switch in door armrest.	Fig. 10-53
4. Doors lock automatically but <u>right</u> door does not unlock when actuating right door lock remote control handle.	Fig. 10-50	8. Doors lock and unlock automatically but <u>left</u> front door does not unlock from control switch in door armrest.	Fig. 10-53
		9. Locks do not operate automatically or from switches in door armrests.	Fig. 10-53

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Fig. 10-44 - Automatic Door Lock Diagnosis Chart Index - Cadillac Styles

Diagnostic Procedures

Try locking and unlocking all doors from electric door lock control switches. If there are any problems in the electric door lock system, first diagnose and correct these problems as described under electric door locks in this section before proceeding with the automatic door lock trouble diagnosis.

The automatic door lock system should perform the following three functions:

1. With ignition on and all doors closed (courtesy lights off), moving the shift lever out of park should cause all doors to lock.

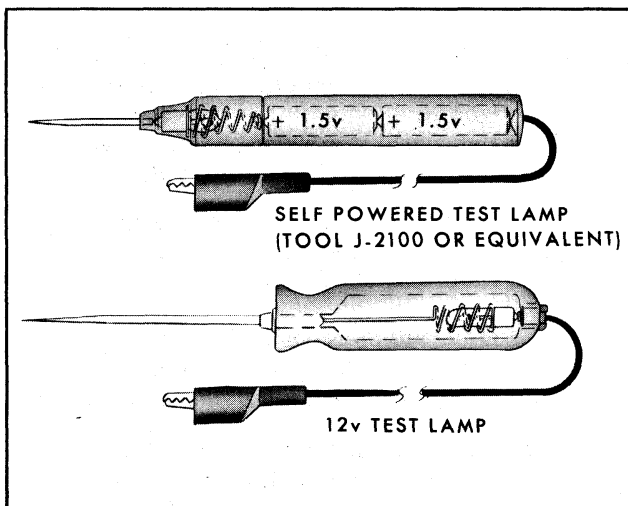


Fig. 10-45 - Test Lamps

2. With same conditions as in 1, moving the shift lever into park should cause all doors to unlock.
3. With all doors locked, unlocking the driver's door with the key should cause all doors to unlock.

If the doors will not lock or unlock when shifting in or out of park as in 1 and 2 above, locate the electronic module in the area just forward of the glove box. Pull the module down carefully far enough so that a test light can be inserted into each wire cavity. With the ignition on, shift lever in park and all doors closed (or the door jamb switch depressed), the module cavities should check as follows (see wiring diagram):

1. Insert a small screwdriver in the black wire cavity. Using a 12 volt test light, connect the ground clip to the small screwdriver, and insert the pointed prod in the orange/black stripe wire cavity at either relay. Light should be on; if not, either the module is not grounded or there is an open in the relay feed circuit (refer to Fig. 10-58).
2. Leave test light ground clip connected to screwdriver for all tests below. Insert test light prod in the dark green wire cavity. Light should provide a ground for the lock relay, closing the relay and causing all doors to lock. If doors do not lock, check lock relay output (dark green/yellow stripe). If there is no voltage output, relay is defective. If there is an output, there is an open in the dark green/yellow wire circuit.

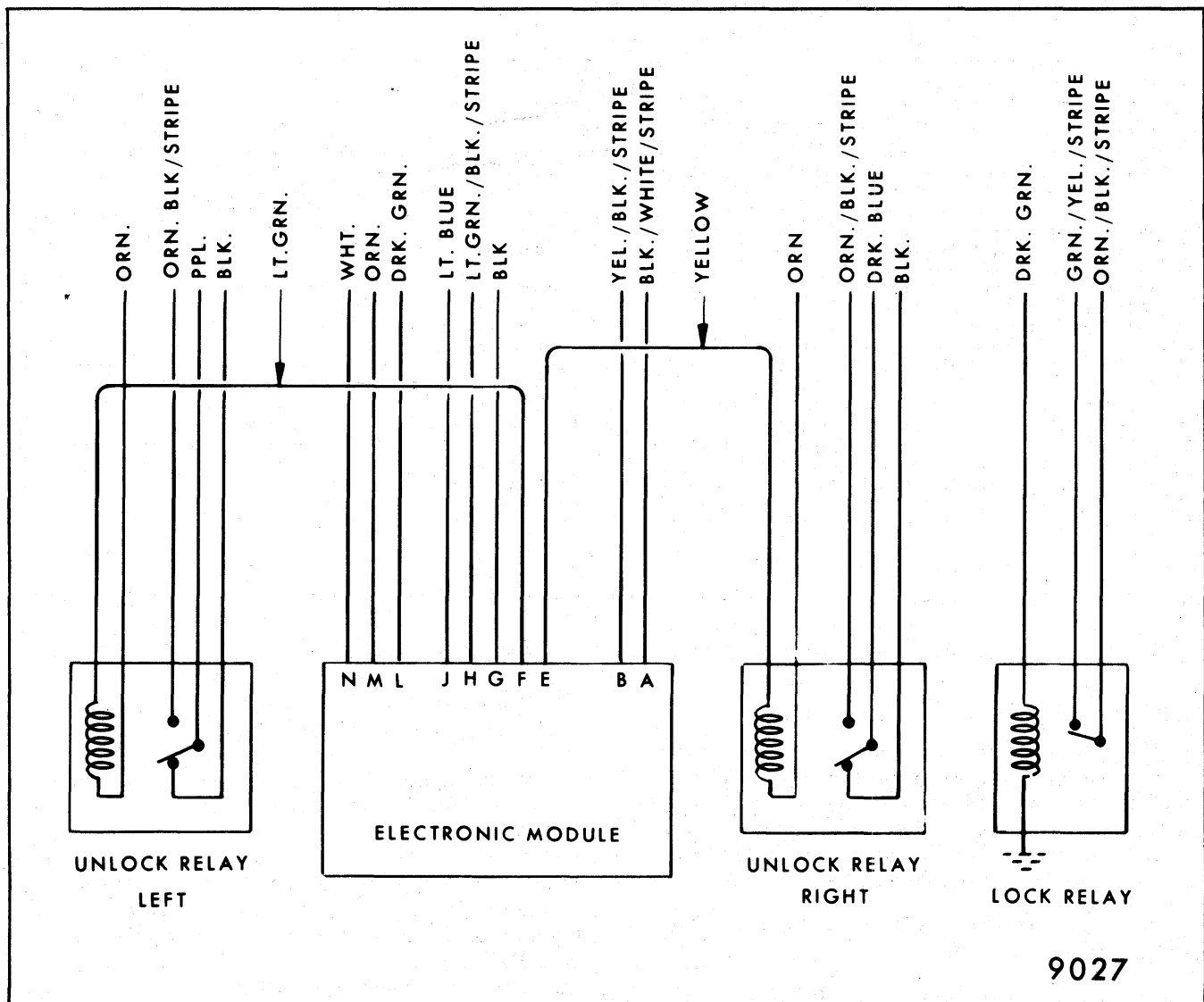


Fig. 10-46 - Module and Relay Assembly Wire Color Identification and Probe Locations

- Insert test light in the yellow wire cavity. The unlock relay should close, causing all doors to unlock. If not, check for a defective relay or an open circuit as in 2 above (refer to Figure. 10-58).
- Insert test light in the pink wire cavity. Light should be on. If not, check for an open circuit from the backup fuse through the neutral start - backup switch jumper.
- Insert test light in the white wire cavity. Light should be on. If the dome and courtesy lights are on, the white wire circuit is grounded somewhere and there can't be any voltage in it. If the courtesy lights will operate but are now turned off, no voltage in the white wire to the module is caused by an open circuit.
- Insert test light in the light green wire cavity of the module. The light should be on with the shift lever in park and off with the shift lever out of park. If not, check for a defective neutral start switch or an open in the circuit to it.
- If the problem has not been detected after completing the above six steps, replace the printed circuit board and check operation of system.

CAUTION: Disconnect pink feed wire, at starter safety switch before removing printed circuit board from module housing.

If the only problem is the failure to unlock all doors when the driver's door is unlocked with the key, the trouble is caused by an open in the circuit to the grounding switch in the door, or by a defective lock switch.

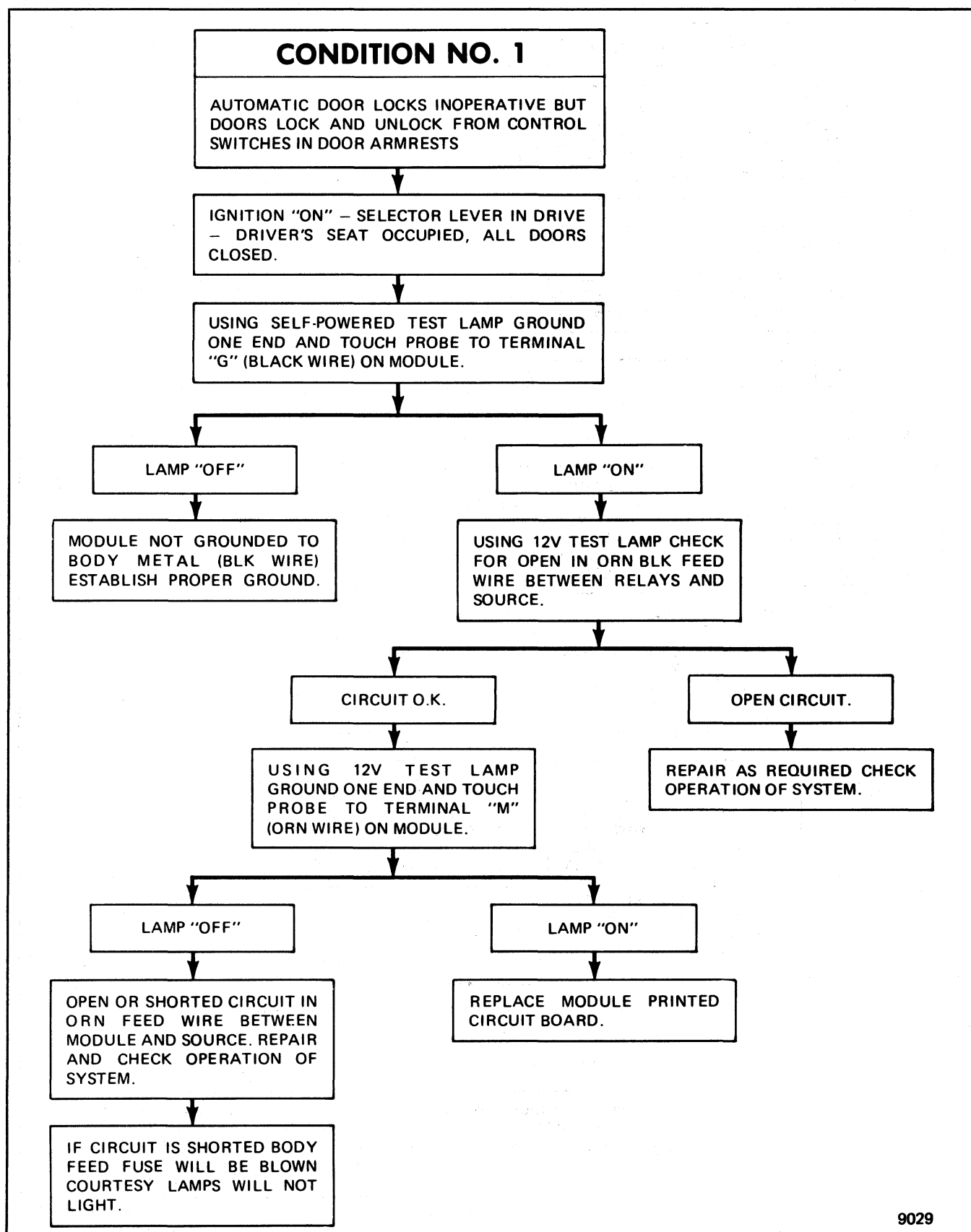


Fig. 10-47 - Automatic Door Lock Diagnosis Chart (Condition No. 1)

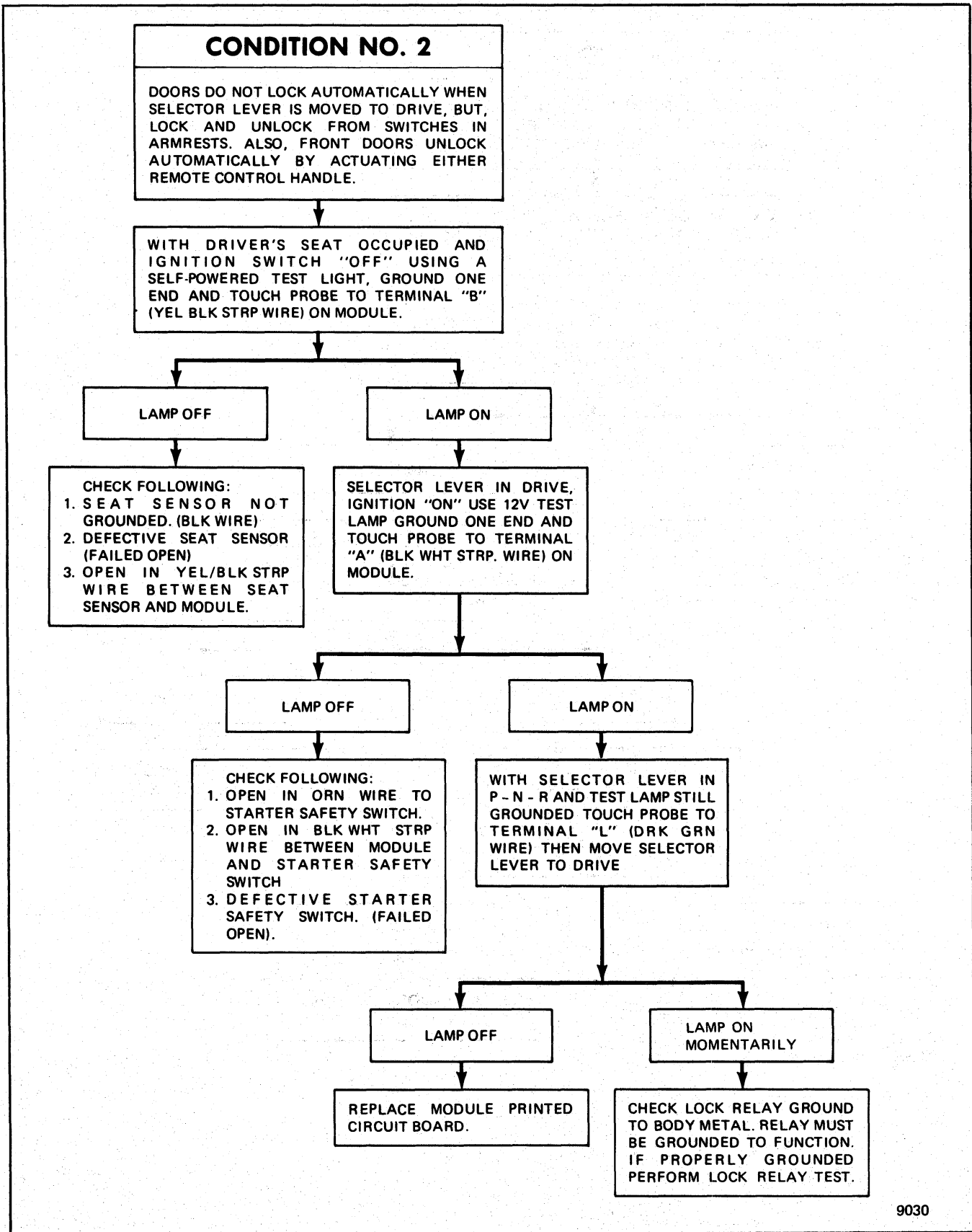
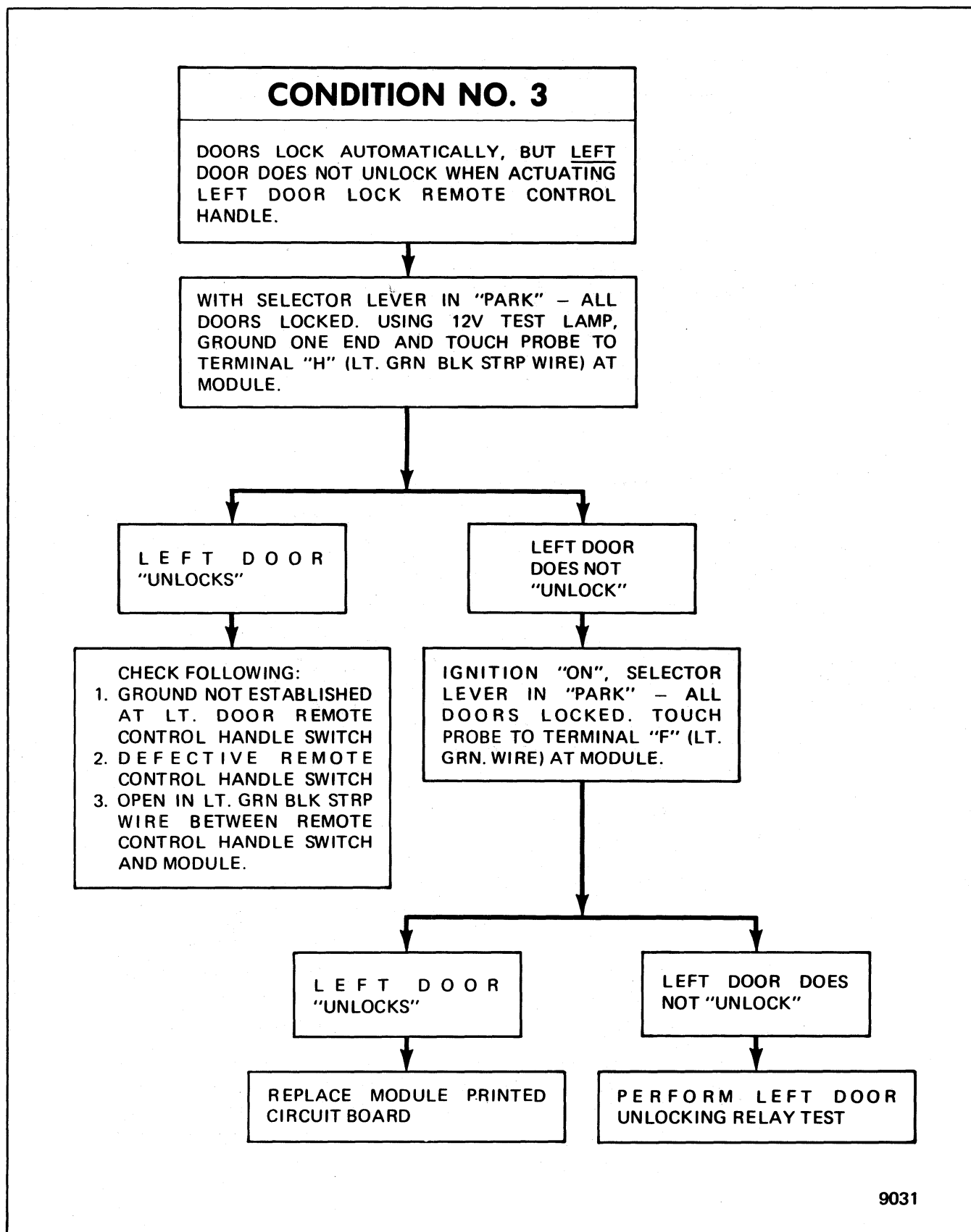


Fig. 10-48 - Automatic Door Lock Diagnosis Chart (Condition No. 2)



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Fig. 10-49 - Automatic Door Lock Diagnosis Chart (Condition No. 3)

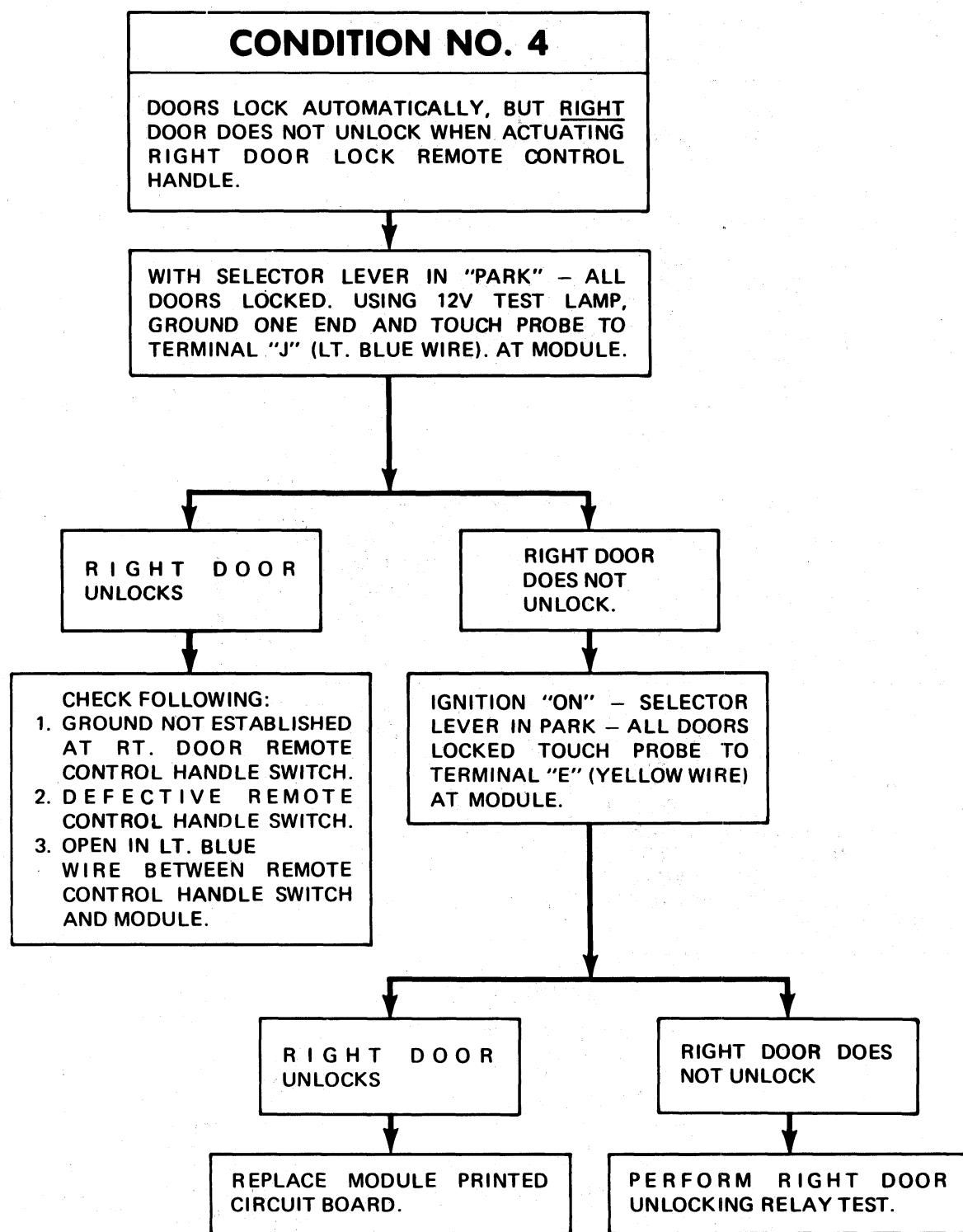
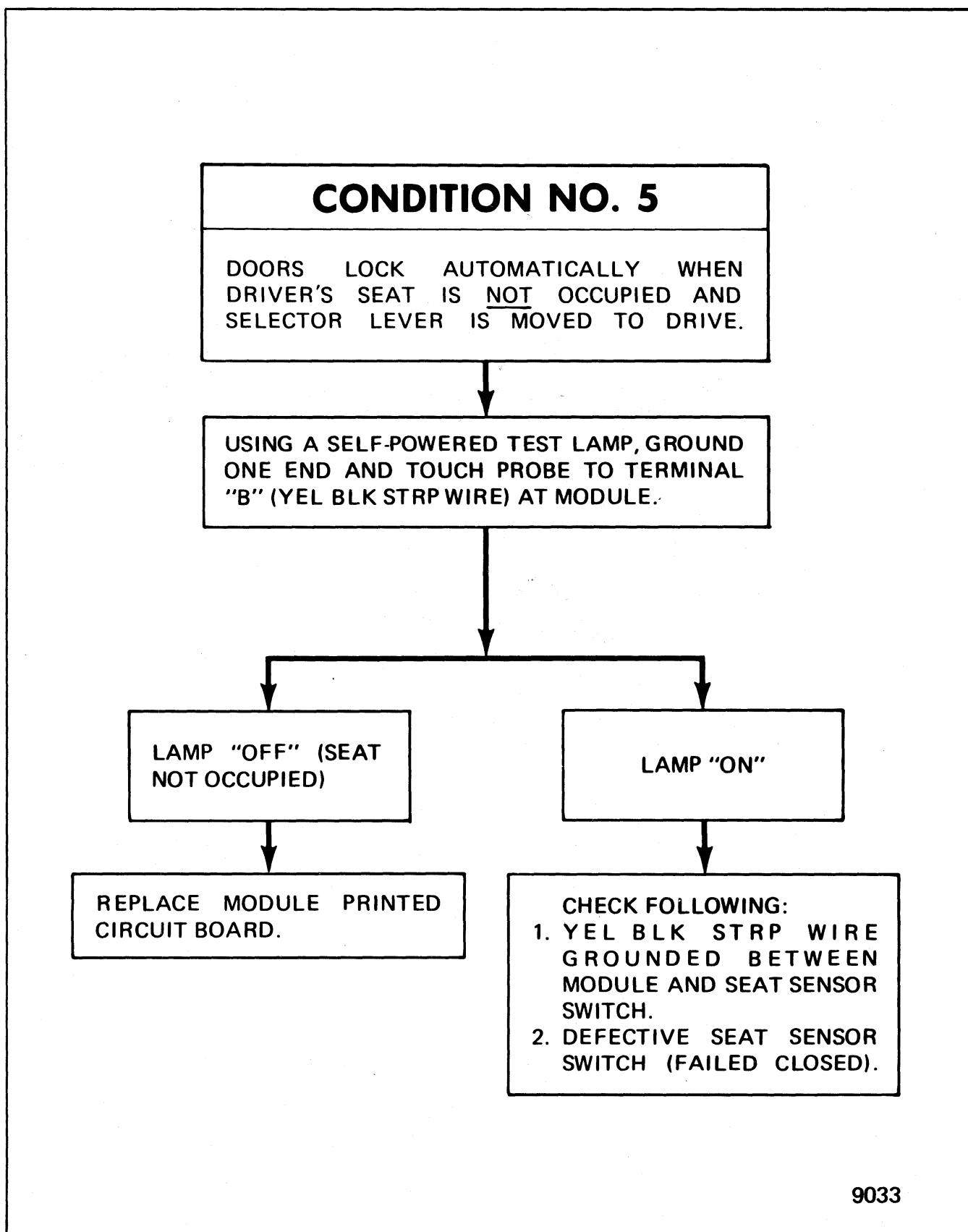


Fig. 10-50 - Automatic Door Lock Diagnosis Chart (Condition No. 4)



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Fig. 10-51 - Automatic Door Lock Diagnosis Chart (Condition No. 5)

CONDITION NO. 6

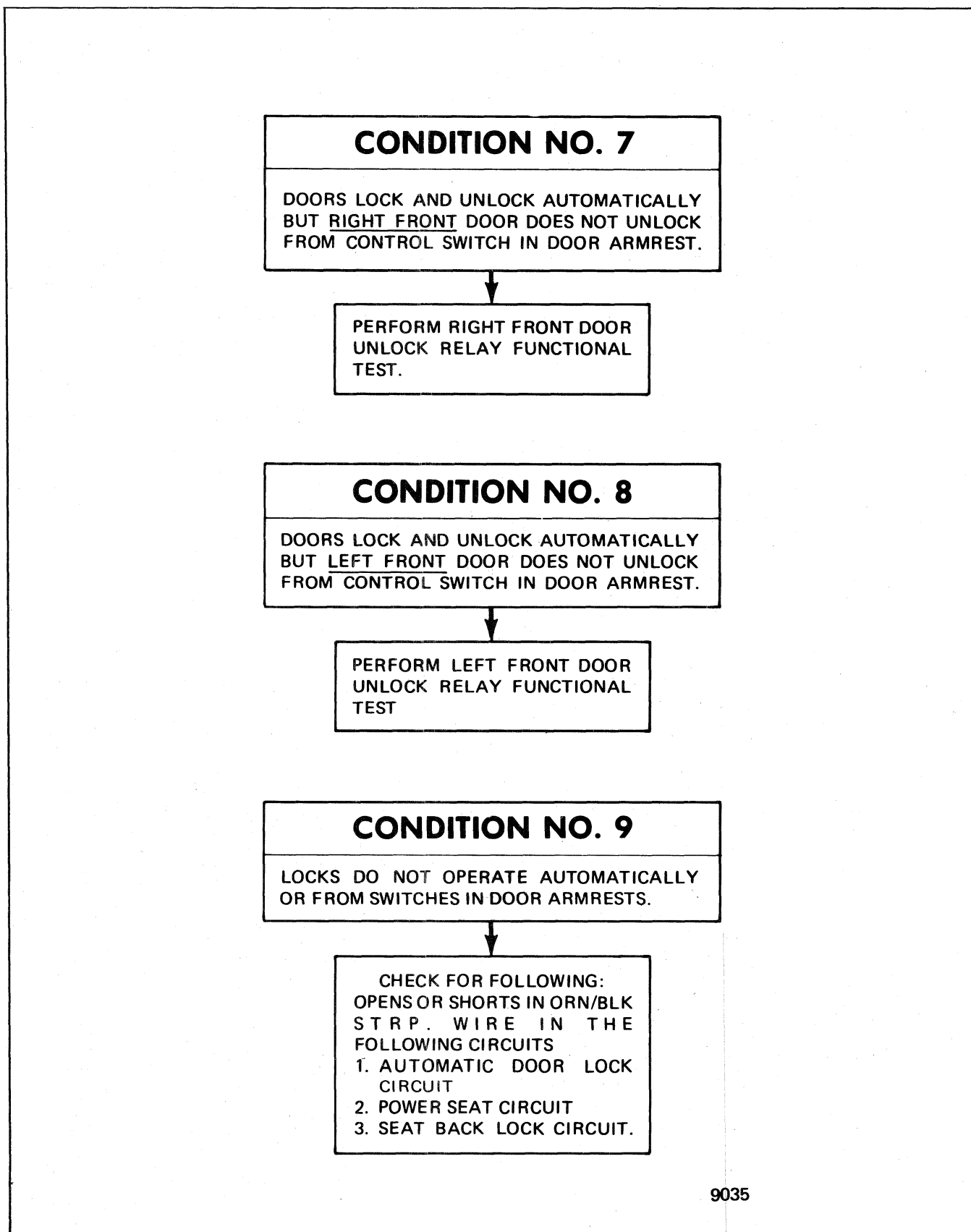
DOOR LOCKS AUTOMATICALLY WITH DOOR(S)
"OPEN" WHEN SELECTOR LEVER IS MOVED TO
DRIVE.



- CHECK FOR FOLLOWING:
- A. OPEN IN DOOR JAMB SWITCH CIRCUIT (WHT WIRE)
 - B. DEFECTIVE DOOR JAMB SWITCH (FAILED OPEN)
 - C. OPEN IN WHT. WIRE BETWEEN MODULE AND COURTESY LAMP CIRCUIT.
 - D. IF CONDITION(S) IN A-B-C DO NOT EXIST, REPLACE MODULE PRINTED CIRCUIT BOARD.

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Fig. 10-52 - Automatic Door Lock Diagnosis Chart (Condition No. 6)



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Fig. 10-53 - Automatic Door Lock Diagnosis Chart (Condition No. 7, 8 and 9)

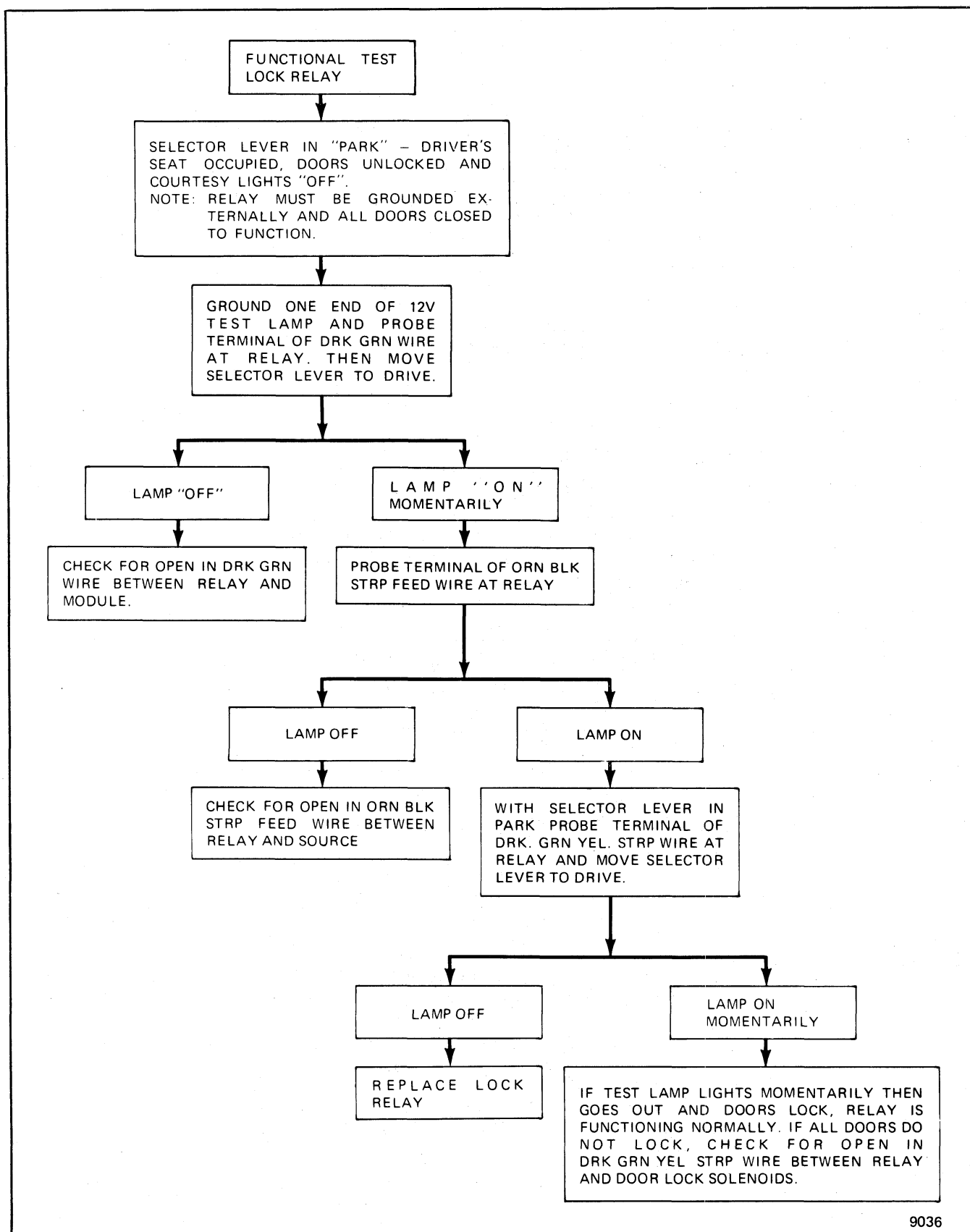


Fig. 10-54 - Automatic Door Lock System Lock Relay Functional Test

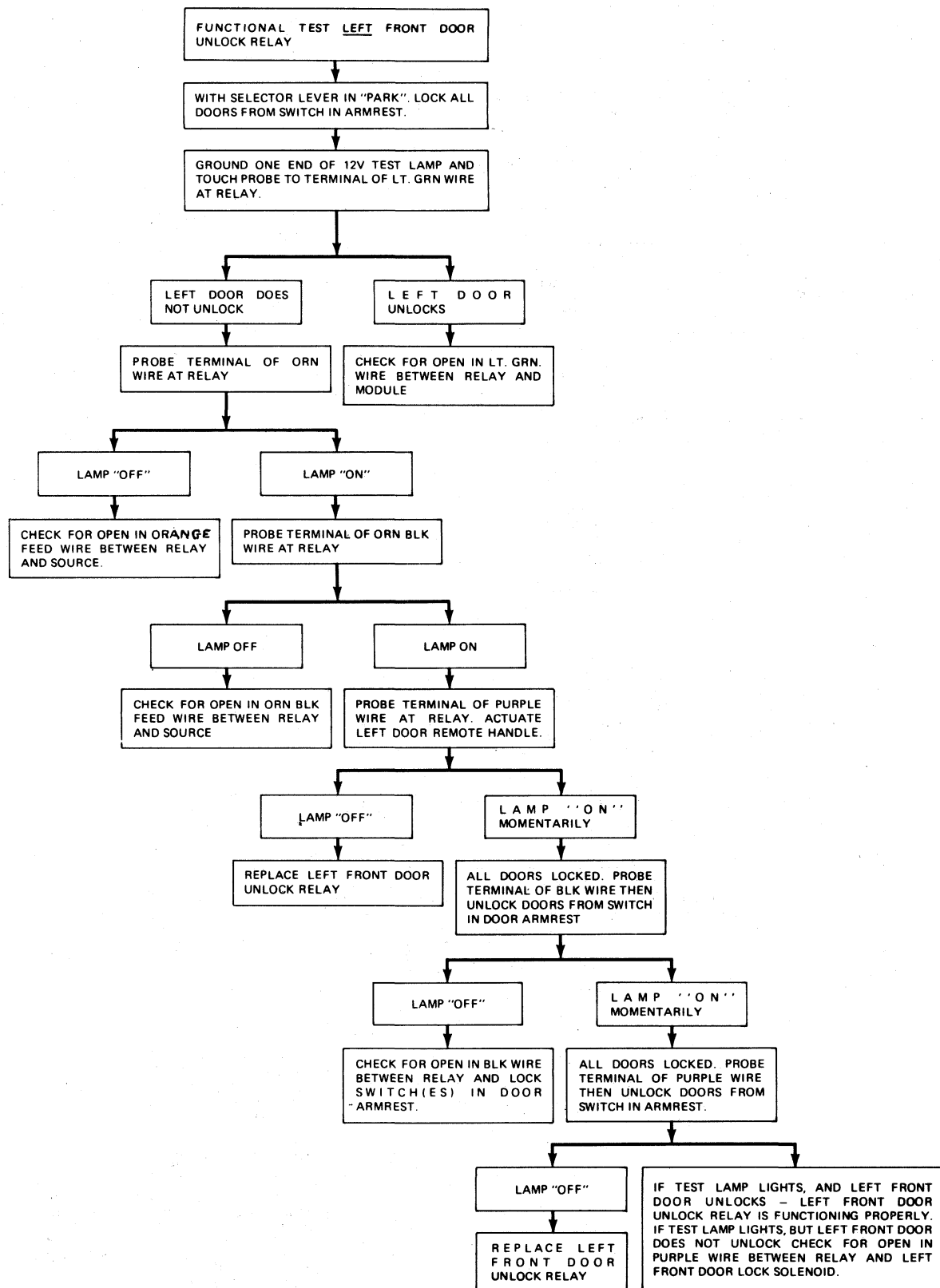


Fig. 10-55 - Automatic Door Lock System Left Door Unlock Relay Functional Test

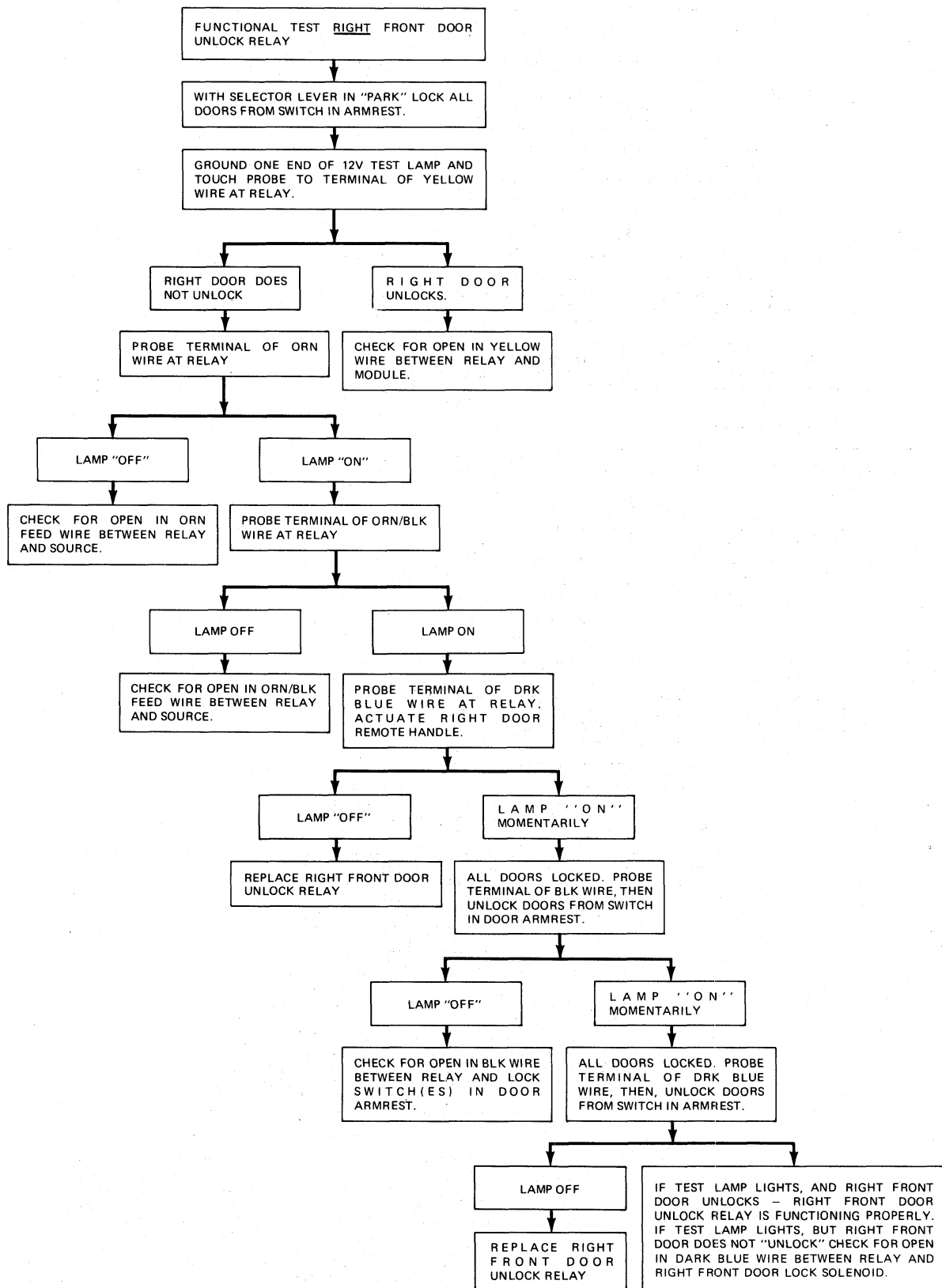


Fig. 10-56 - Automatic Door Lock System Right Door Unlock Relay Functional Test

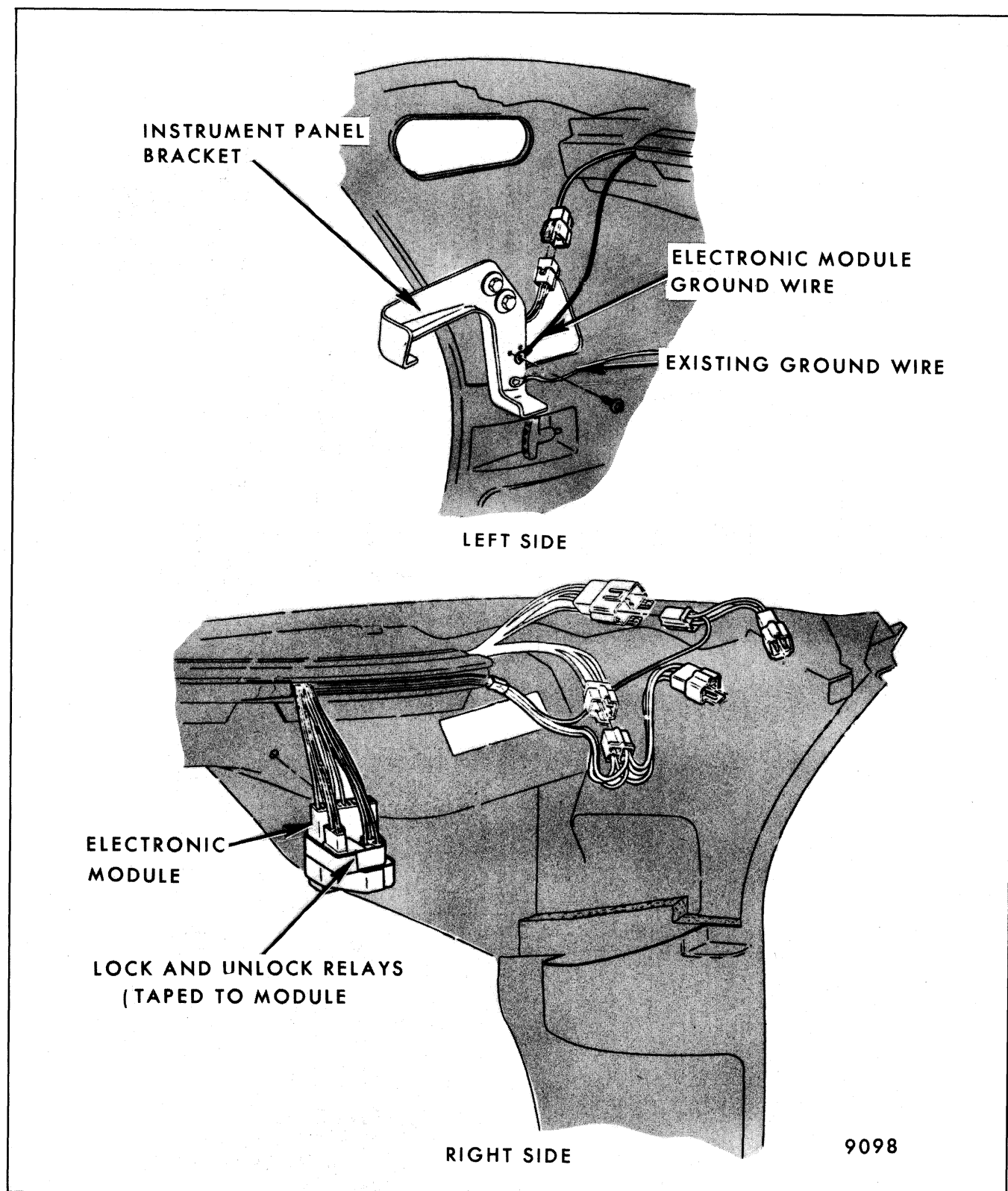
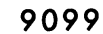


Fig. 10-57 - Automatic Door Lock Module and Relay Installation (Buick "C and E" Styles)



THEFT DETERRENT SYSTEM - Oldsmobile "B-C-E" and Cadillac "C-D-E" Styles

DESCRIPTION

The theft deterrent system is designed to sound an alarm in case of forced entry into the vehicle while it is locked. The alarm will be activated if either front door or the rear compartment lock cylinder is forcibly rotated, pulled outboard or pushed inboard. The alarm will also activate if any front or rear door is opened. When the alarm is activated, a pulsating operation of the horn, head lamps, tail lamps and side marker lamps will occur. The alarm will con-

tinue to operate for a period of five minutes, shut off, then rearm. If the alarm is activated accidentally or because of a malfunction in the system it can be turned off by inserting the key in either front door lock cylinder and momentarily turning the key to the unlock position.

NOTE: For service information on related components and complete diagnostic procedures refer to Car Division Service Manuals.

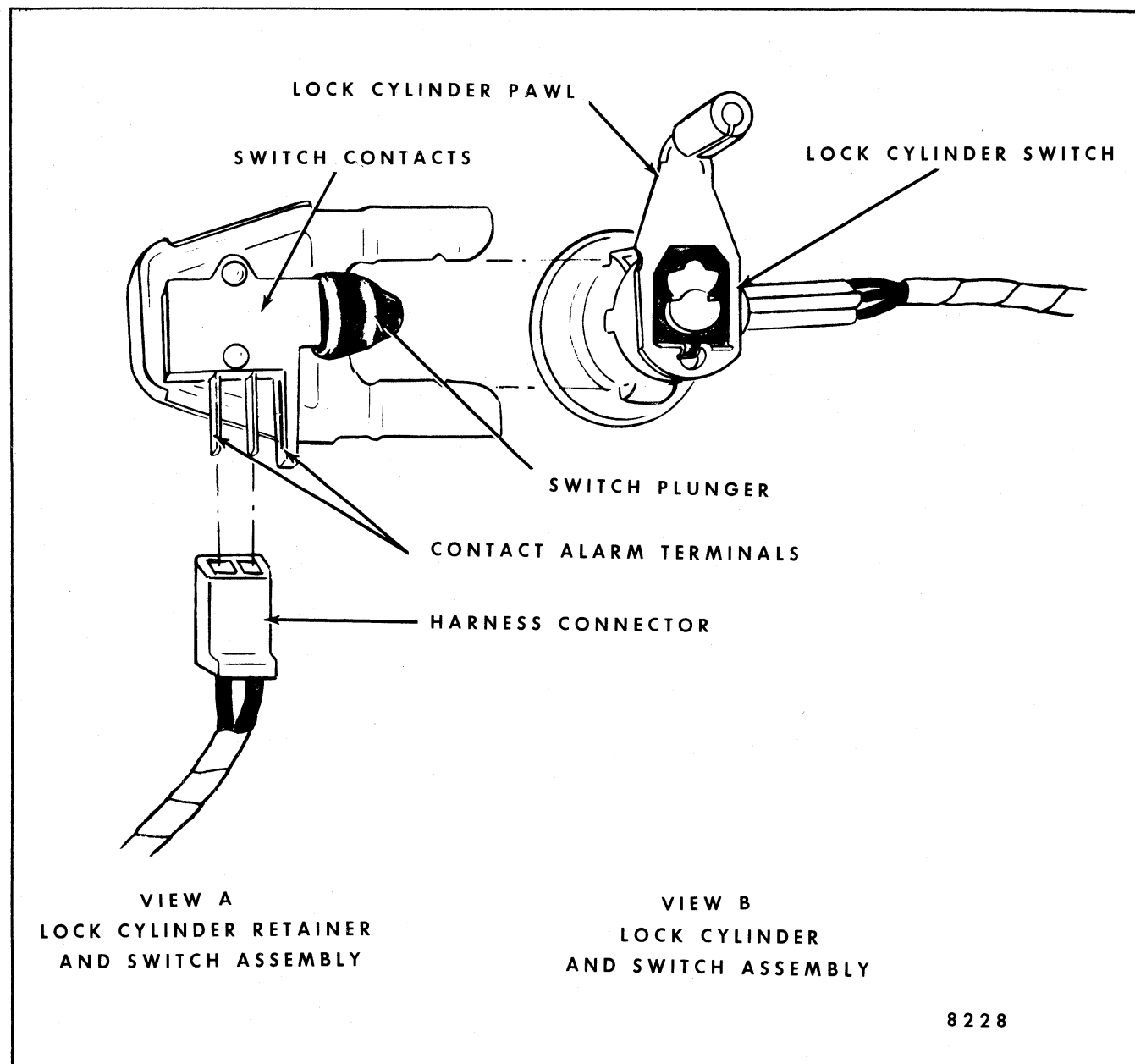


Fig. 10-59-Front Door Lock Cylinder Switch Assemblies

FRONT DOOR LOCK CYLINDER AND SWITCH ASSEMBLY

The front door lock cylinder pawls are color coded to prevent possible reverse installation. The pawl on the right side cylinder will be a noticeable color, usually black or gold. The pawl on the left side cylinder will have a natural metal finish.

The lock cylinders include an integral switch. On Oldsmobile styles, when the key is turned to the lock position the switch is momentarily closed creating a holding (arm) circuit through a controller and arming the system.

On Cadillac styles the holding (arm) circuit is created when the door lock switch in the armrest is pushed to the lock (arm) position and the front door is closed. If the switch is pushed to the unlock position the "arm" circuit will be aborted.

If the arm circuit is completed to ground on either style at the front door lock cylinder retainer and switch assembly, rear compartment lock cylinder and switch assembly or any door jamb switch, the alarm will be activated. When the front door key is turned to the unlock position, the holding (arm) circuit is broken at the controller and the system is disarmed (View A, Fig. 10-59).

FRONT DOOR LOCK CYLINDER RETAINER AND SWITCH ASSEMBLY

Each front door lock cylinder is secured to the door assembly (inboard side of door outer panel) by a metal retainer and switch assembly. When the retainer is installed over the lock cylinder, the switch plunger, which is under spring tension, is depressed by being pushed against the lock cylinder. This holds the switch contacts open. If the lock cylinder is forcibly rotated, pulled outboard or pushed inboard the retainer and switch assembly will fall off the lock cylinder. This action releases the switch plunger and closes the contacts which completes the circuit to ground and activates the alarm (View B, Fig. 10-59).

REAR COMPARTMENT LOCK CYLINDER AND SWITCH ASSEMBLY

The rear compartment lock cylinder and switch assembly is installed through a piercing in the lid outer panel and secured by a metal retainer. The lock cylinder incorporates a spring loaded switch which is held open by a tab on the cylinder that engages the edge of the lid outer panel metal when installed (Fig. 10-60). If the lock cylinder is forced out of position, the retainer will fall off the cylinder and the tab will be released allowing the switch contacts to close and complete the circuit to ground, activating the alarm. When using the key however, the rear compartment can be opened at anytime. Refer to Figures 10-61 and 10-62 for appropriate theft deterrent wiring diagrams.

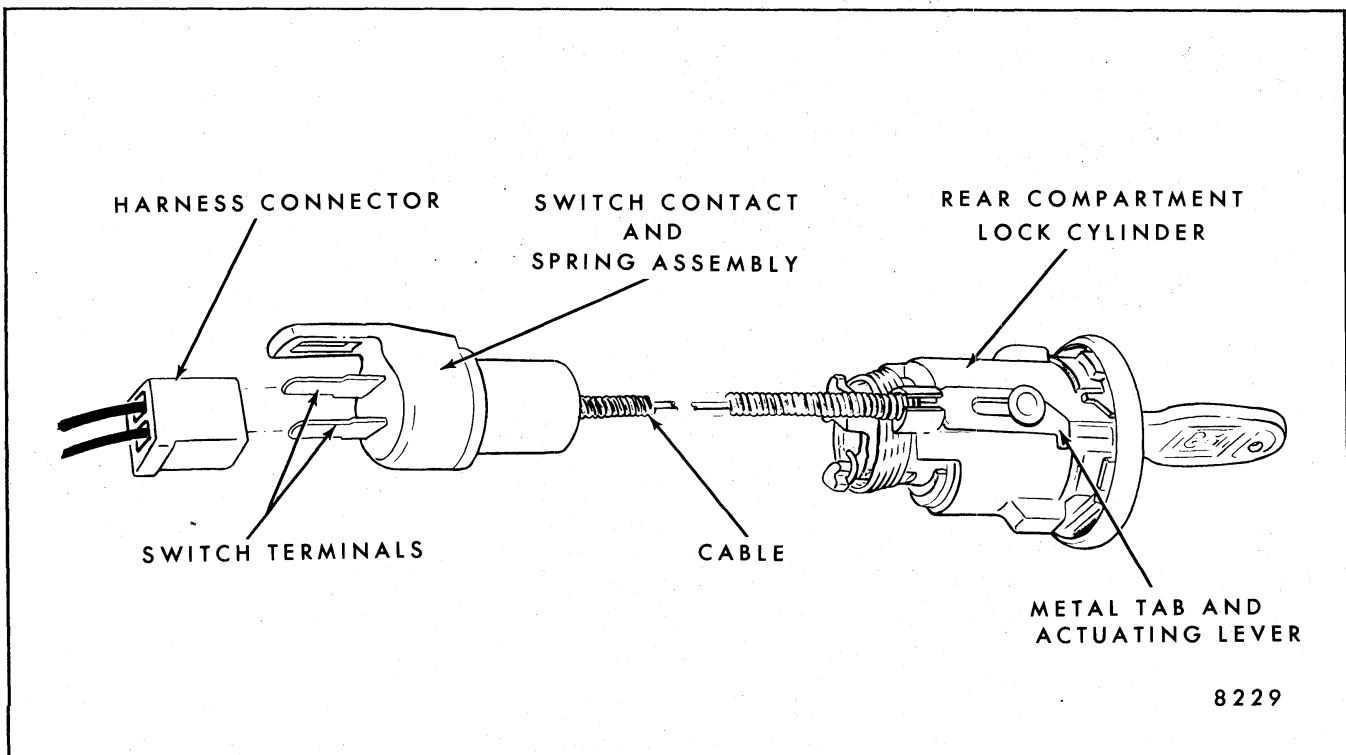


Fig. 10-60-Rear Compartment Lock Cylinder and Switch Assembly

Fig. 10-61-Theft Deterrent Circuit Diagram - Oldsmobile Styles

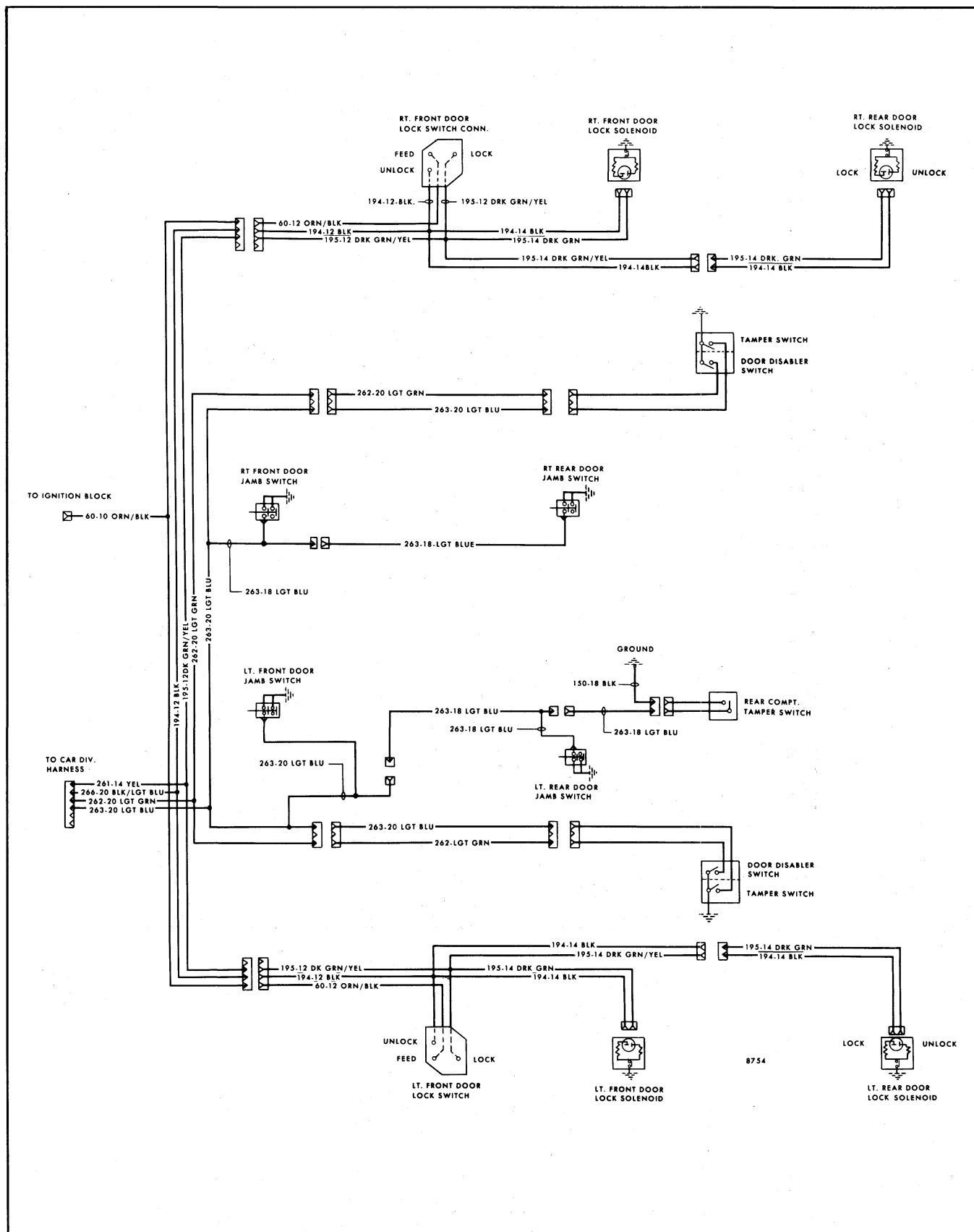


Fig. 10-62-Theft Deterrent Circuit Diagram - Cadillac Styles

ELECTRIC SEAT BACK LOCK RELEASE

DESCRIPTION

Electric seat back lock release is optional on most 2-door styles equipped with electric door locks. The system utilizes two solenoids, one each for the driver's and passenger's seat backs and works individually in conjunction with insulated door jamb switches (Fig. 10-63).

The insulated "flow-through" type jamb switch completes the circuit, when the door is opened, from the power source to the respective internally grounded driver or passenger seat back lock solenoid, releasing the seat back lock.

Each solenoid incorporates both an "unlock" and a "hold-in" coil. These coils are stacked in tandem around a single plunger and are energized individually. The "unlock" coil draws approximately 18 amps of current and the "hold-in" coil approximately 0.6 amps. When the solenoid plunger reaches its full travel (approximately 1/4 inch), it trips an internal limit switch and opens the ground circuit for the "unlock" coil, leaving the "hold-in" coil energized.

When the door is closed the solenoid de-energizes and allows the seat back lock to return to the lock position. The seat backs incorporate a manual override release.

The flow-through type jamb switch used in conjunction with this system is attached to the front body hinge pillar by a threaded retainer (Fig. 10-63). It has a two prong female connector and is installed adjacent to the conventional jamb switch. Initial adjustment is made automatically by SLOWLY closing the door which positions the collar properly in the retainer. Further inward adjustment is accomplished in the same manner; however, after initial adjustment NO OUTWARD adjustment of jamb switch is possible.

CAUTION: If REARWARD adjustment of either front door is made, replace the jamb switch and close the door to adjust as stated in the preceding paragraph. Confirm correct operation by opening the door and slowly closing it to the secondary lock position (first click). The seat back lock must then be locked (solenoid de-energized).

CIRCUIT CHECKING PROCEDURES

All electrical checks are performed with a test lamp on each individual door. Each seat back lock con-

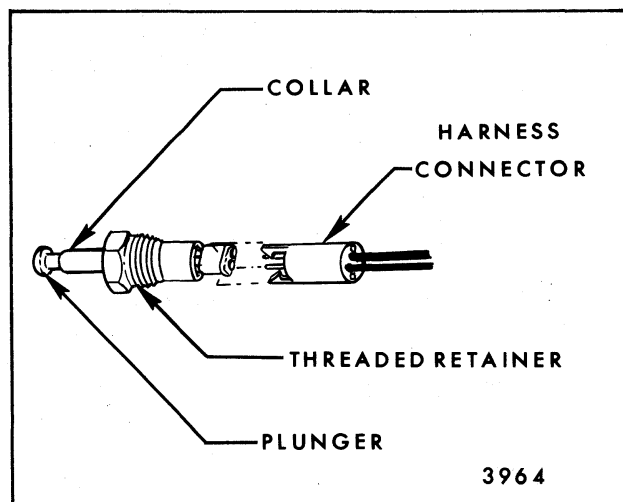


Fig. 10-63-"Flow-Through" Type Jamb Switch

tains a separate circuit. Refer to Figure 10-64 for circuit diagram.

Seat Back Lock Solenoid

1. Check feed current at solenoid jumper (black wire) at solenoid.
 - a. If no light, locate and repair short between solenoid and power source.
 - b. If lamp lights, provide an external solenoid ground. If solenoid still fails to operate and no mechanical binds exist, replace solenoid.

CAUTION: On strato-seats the solenoid is replaced as part of the lock assembly for either a mechanical bind or solenoid failure.

Circuit Breaker - All Styles

1. To Check Feed Circuit Continuity at Circuit Breaker - connect one test light lead to input side of circuit breaker (at left shroud) and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.
2. To Check Circuit Breaker - connect test light lead to output side of breaker and ground other lead. If tester does not light, circuit breaker is inoperative.

Jamb Switch

Remove the jamb switch from the pillar and touch test lamp prod to the orange wire terminal.

1. If no light at orange wire, locate and repair open circuit.

2. Place jumper from orange to yellow wire, if system operates replace jamb switch.

NOTE: Refer to "flow-through" jamb switch description for adjustment.

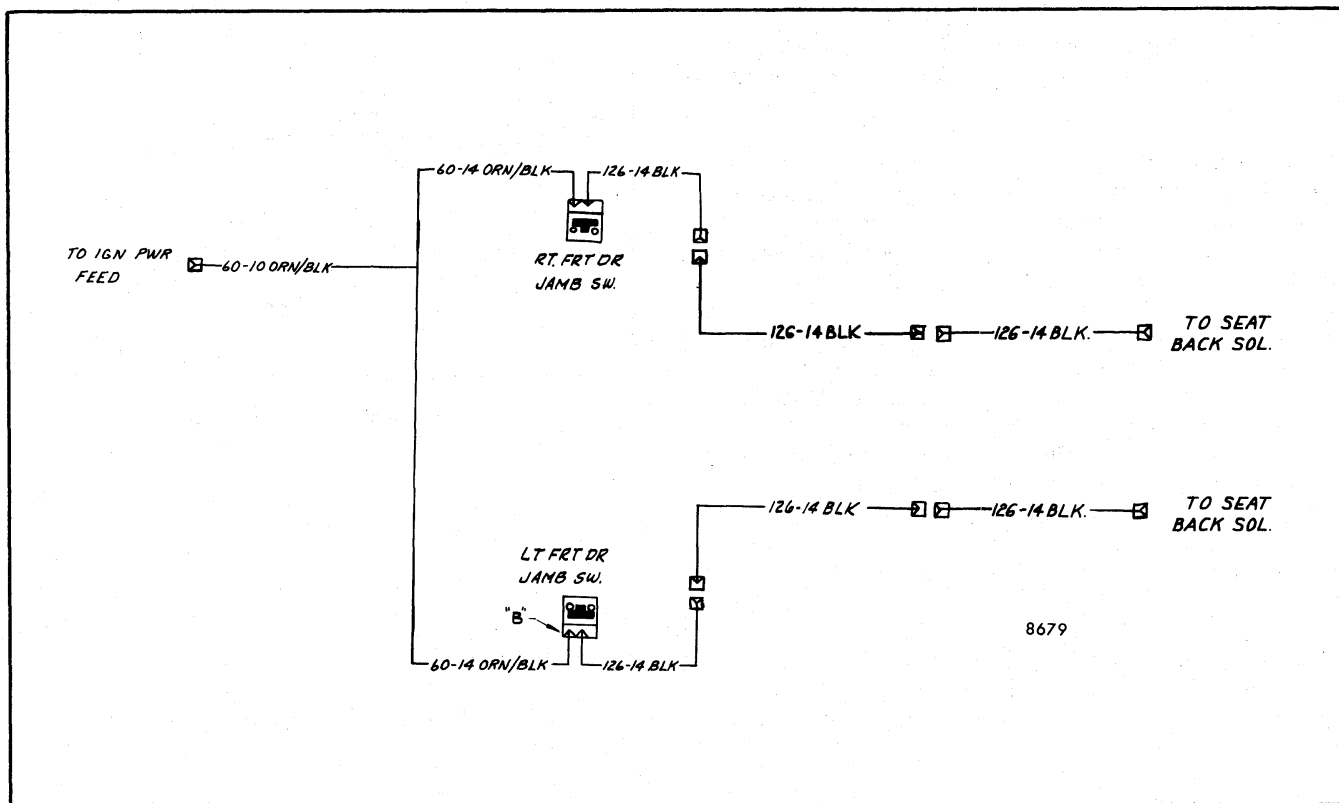


Fig. 10-64-Seat Back Lock Circuit Diagram - "B-C-E" Styles Shown ("A" Style Similar)

ELECTRIC BACK WINDOW GRID DEFOGGER

DESCRIPTION

The optional back window grid defogger system consists of a tinted glass that has a number of horizontal ceramic silver compound element lines and two vertical bus bars baked into the inside surface during the glass forming operation. Braided wire is soldered to the bus bars on each side of the glass except "B" style station wagon tailgate glass. The feed wire terminal on the tailgate glass is soldered to the bus bar at the left upper corner. The lead wires (stranded, round wire) are spliced to the braided wire and covered with an extruded plastic sleeve to insulate them from body metal.

The system operates on 12 volts with a current draw of 20 amps (plus or minus 2 amps) when glass is at

75 degrees F. Under some conditions, heat from the glass may not be detected by finger touch. The length of time required to remove interior fog from the back glass will vary with such conditions as vehicle speed, outside glass temperature, atmospheric pressure, number of passengers, etc.

This system utilizes an instrument panel mounted switch with an integral indicator lamp. Once the switch has been activated, the system will operate continuously until that switch or ignition is turned "off". A relay is used in conjunction with the air conditioning system to regulate the blower motor speed when the heated back glass is in operation.

On "H" styles the system will operate for approximately ten minutes and automatically turn off

through the use of an automatic timer. The system can be turned off during this operating period by turning either the instrument panel mounted switch or ignition switch to "OFF".

Connector Location

The location of feed wire connectors differs on various styles. Figure 10-65 indicates location of lead wires and connectors.

NOTE: The ground wire screw on the rear seat back panel may in some cases be inaccessible from the rear compartment. If this condition is encountered, cut the lead as close as possible to the attaching point. To reinstall, use a new "ring terminal" and secure the terminal with a sheet metal screw to a convenient location on the seat back panel.

Testing Grid Lines

To locate inoperative grid lines, start engine and turn on the electric grid defogger system. Ground one test lamp lead and **LIGHTLY** touch the other prod to each grid line. Figure 10-66 illustrates the pattern of

test lamp brilliance to be expected with a properly functioning grid.

NOTE: If test lamp bulb shows full brilliance at both ends of grid lines check for loose ground wire contact to body metal.

NOTE: The range of zones in Figure 10-66 may vary slightly from one glass to another; however, the bulb brilliance will decrease proportionally to the increased resistance in the grid line as the prod is moved from the left bus bar to the right.

All grid lines must be tested in at least two places to eliminate the possibility of bridging a break. For best results contact each grid line a few inches either side of the glass centerline. If an abnormal light reading is apparent on a specific grid line - place test lamp prod on that grid at the left bus bar and move prod toward the right bus bar until light extinguishes. This will indicate a break in the continuity of the grid line (Fig. 10-67).

Grid Line Repair

A durable repair may be accomplished using the Rear Window Electric Grid Defogger Repair Kit (Part No. 1051223 or equivalent) which consists of:

STYLE	GROUND WIRE LOCATION	FEED WIRE LOCATION	CONNECTOR LOCATION	TRIM REMOVAL REQUIRED TO DISCONNECT WIRES FOR GLASS R & I
"A" STYLES	Right Side	Left Side	Rear Compartment at Rear Seat Back Panel	Disconnect in Rear Compartment - Lift Rear Corners of Rear Seat to Back Window Trim Panel to Pull Wire Through
"F" STYLES	Right Side	Left Side	Rear Compartment	Rear Seat Cushion and Back, Shelf Trim and Right Quarter Upper Trim Panel
"B-C-E" STYLES Except Station Wagons & Convertibles	Right Side to Rear Compartment Lid Hinge Box	Left Side	Rear Compartment Under Shelf	Rear Seat Cushion and Back and Shelf Trim
STATION WAGONS	Right Side	Left Side	Left Upper Corner on Glass	Standard Glass Removal Operation
CONVERTIBLES	Right Side	Left Side	Exposed - Below Right and Left Lower Corners of Glass	None
"H" "11" STYLES	Right Side to Rear Seat Back Panel	Left Side	Rear Compartment	Rear Seat Cushion and Back
"H" "05,07,15,77" STYLES	Right Side	Left Side	Left and Right Upper Corner of Glass	Standard Glass Removal Operation

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Fig. 10-65-Connector Location - Optional Rear Window Electric Grid Defogger

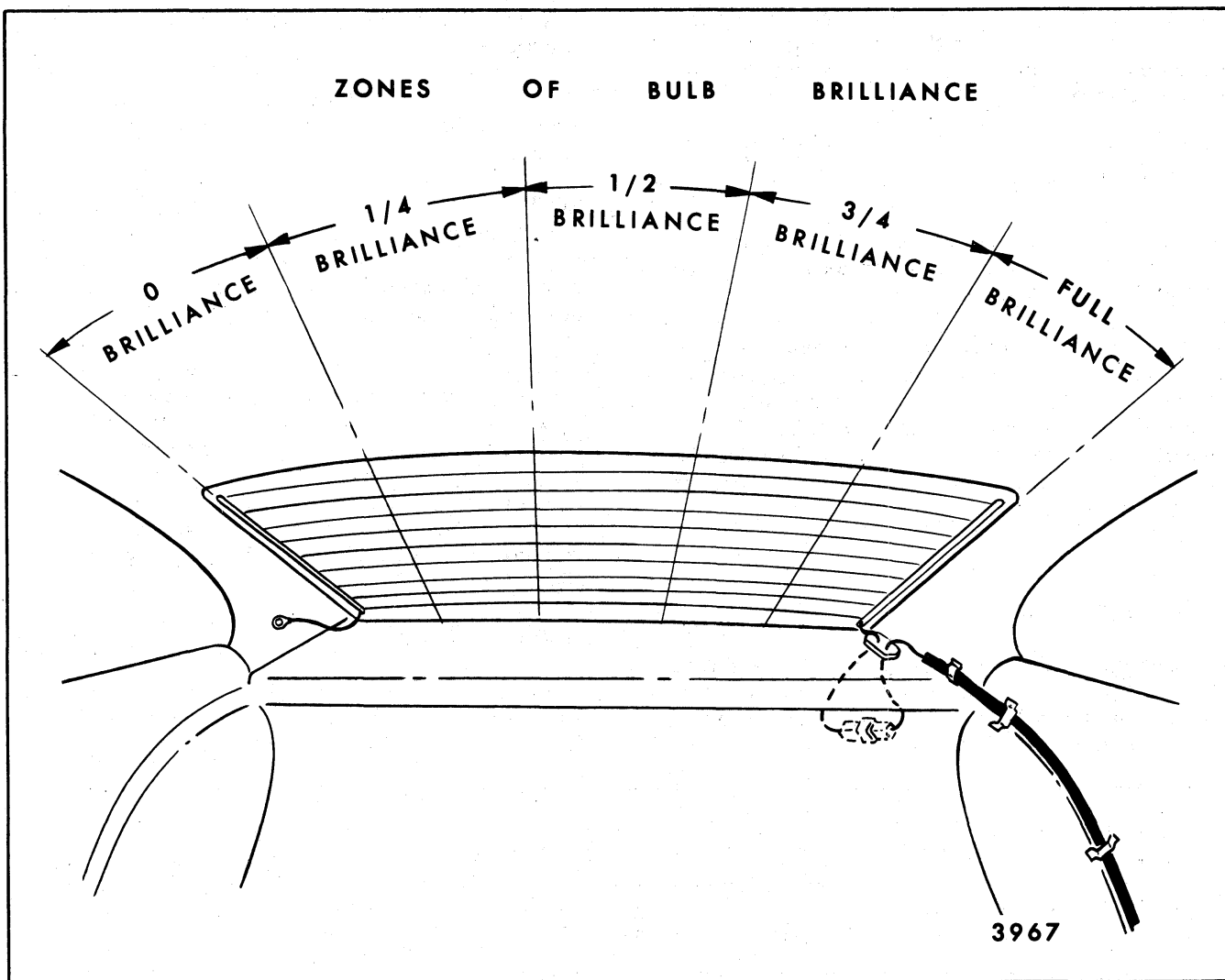


Fig. 10-66-Test Lamp Bulb Brilliance Zones - Normal Operating Electric Grid Defogger

1. Plastic rectangular shaped mixing plate
2. Decal
3. Syringe of silver plastic
4. Syringe of hardener
5. Mixing stick
6. Instruction sheet
2. Lightly buff grid line in area to be repaired with fine steel wool buffing approximately 1/4" on both sides of break. Thoroughly wipe with a clean cloth dampened in alcohol. It is necessary that all contaminants be removed from the repair area.
3. Use the decal supplied in the kit or apply two strips of electrician's plastic tape above and below the damaged grid line in order to control the width of repair material. Proper tape positioning may be checked from outside the vehicle.

NOTE: If the decal is used, be sure that the die-cut metering slot is the same width as the grid line to be repaired. If the slot is too narrow or too wide, use tape as described in step 3.

Repair Procedure

1. After the broken grid line has been located and marked (indicate break with a grease pencil on the outside surface of the glass), the system must be shut off.
4. Lay the plastic rectangular shaped mixing plate on a flat surface and dispense the silver color

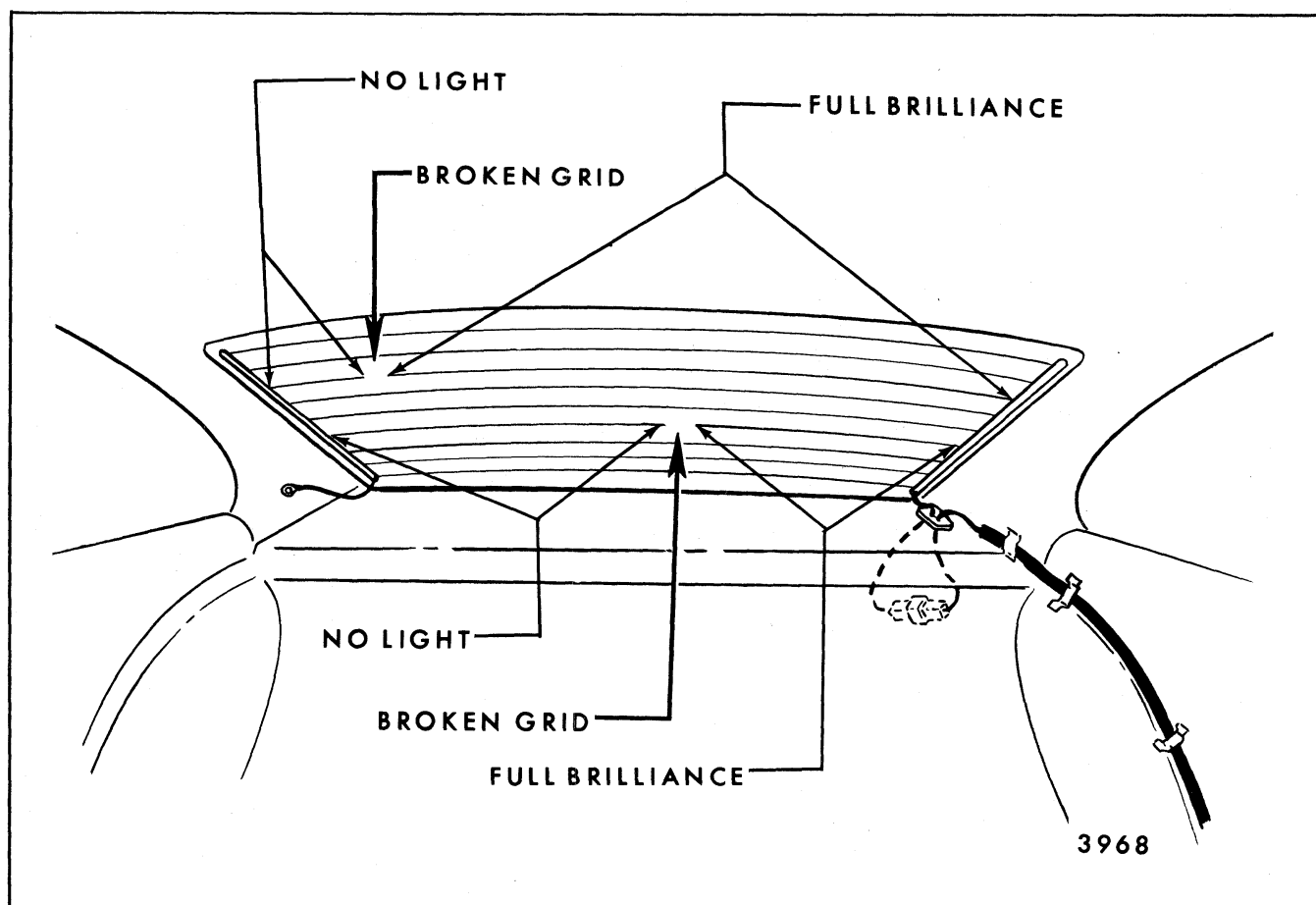


Fig. 10-67-Test Lamp Bulb Brilliance with Broken Grid Lines

material in a circular ring on the mixing plate by pushing syringe plunger to the bottom.

5. Dispense dark hardener in the center of the circle by pushing dispenser plunger to the bottom.

NOTE: If hardener has crystallized, heat container at 108 degrees F until hardener is liquified.

6. Mix the dark hardener into the silver plastic by blending the material with the mixing stick.
7. With the glass at room temperature, apply the repair material with the small wooden mixing spatula, slightly overlapping the existing grid line either side of the break (Fig. 10-68).

8. Carefully remove the decal or tape.

9. Apply a constant stream of hot air directly to the repaired area with a heat gun (preferably 500 degrees F to 700 degrees F range) for 1 to 2 minutes. Heat gun nozzle should be held approximately one inch from repair (minimum of

300 degrees F is essential for establishing conductivity) see Figure 10-69.

CAUTION: In order for the repaired area to reach the desired level of electrical conductivity, the repair material must be cured with heat. When working close to interior trim, it may be necessary to protect the trim that is immediately adjacent to the stream of heat.

NOTE: If back window electric grid defogger grid line appears off-color after performing the repair, use a fine brush or pipe cleaner and apply a coat of tincture of iodine on approximately one inch on either side of the repaired area. Allow iodine to dry for about thirty seconds and carefully wipe off excess with lint free cloth.

10. Retest grid lines to insure proper operation.

NOTE: Although grid defogger is operational, additional air dry time is required to effect a complete cure; therefore, the area of repair must not be physically disturbed for 24 hours.

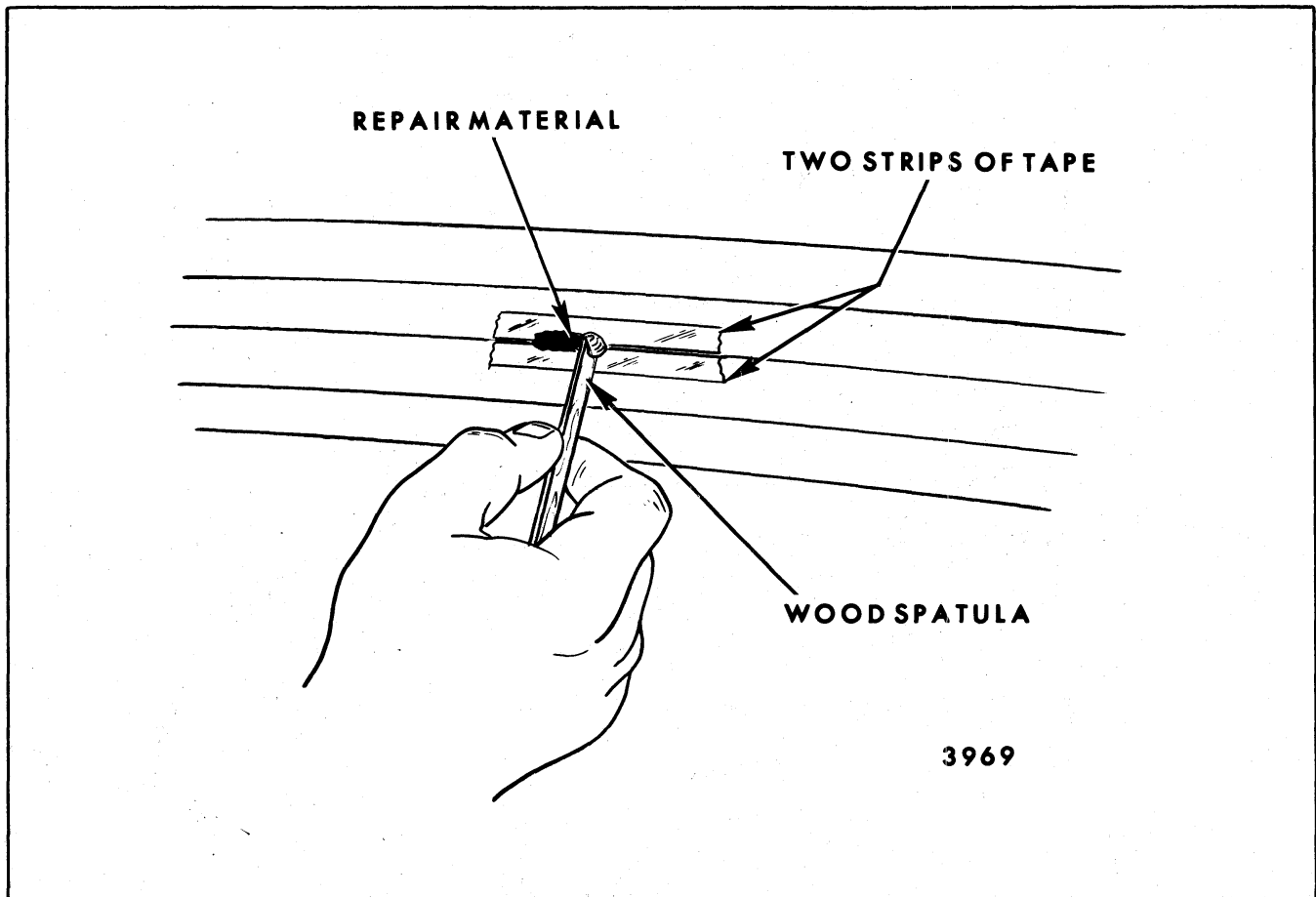


Fig. 10-68-Appling Repair Material to Broken Grid

Braided Lead Wire Repair

Repair of bus bar braided lead wire may be accomplished by resoldering with 3 per cent silver solder and rosin flux paste in the following manner:

1. Lightly buff the bus bar in the area to be repaired with fine steel wool to remove oxide coating formed during glass firing.
2. Brush a small amount of flux paste on bus bar.
3. Coat the tip of a small soldering iron with 3 per cent silver solder and draw across the bus bar depositing a thin coating of solder.
4. Repeat the procedure for the braided lead.
5. Position the braided lead on the bus bar and apply heat to complete soldering operation.

NOTE: Only enough heat to melt solder (to start flowing) is recommended. Contact bus bar for as short a time as possible.

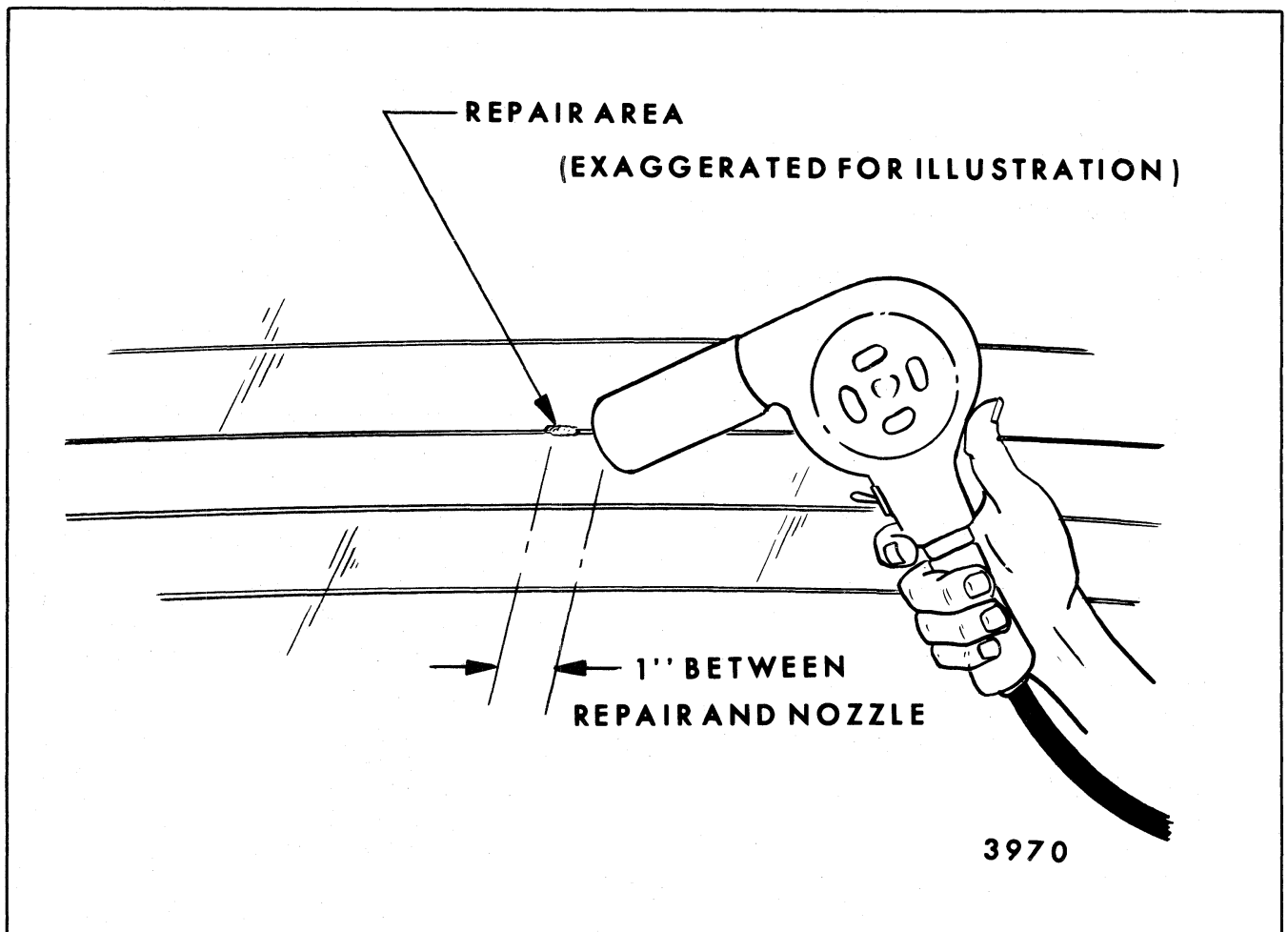


Fig. 10-69-Applying Heat to Grid Line Repair

BACK WINDOW DEFOGGER (BLOWER TYPE)

DESCRIPTION

The defogger is designed to operate at either high or low speed. Air is drawn into the defogger blower and directed against the rear window through a blower outlet.

CIRCUIT CHECKING PROCEDURES

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. For circuit diagrams, refer to Figures 10-70 through 10-73.

Checking Blower Control Switch

Refer to Car Division Service Manual

Checking Blower Motor

1. Check blower motor ground wire for proper ground.
2. Disconnect blower motor feed wire.

NOTE: A resistor is used in the circuit to provide the difference between high and low speeds. If there is only one output feed wire at the switch connector, the resistor is located in the switch. If two output feed wires are found at the switch connector, the resistance is included in the low speed wire harness.

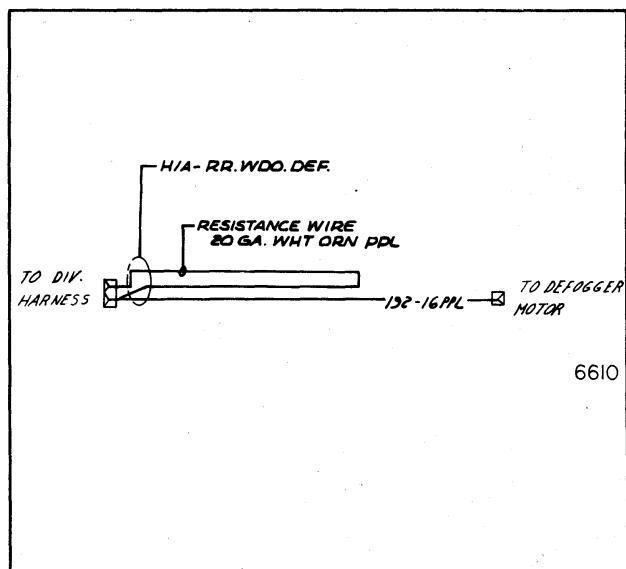


Fig. 10-70-Defogger Circuit Diagram - "A-B-C-E" Styles

- Using a 12 volt power source, connect the negative lead to the blower motor ground wire and the positive lead to the motor feed wire. If the

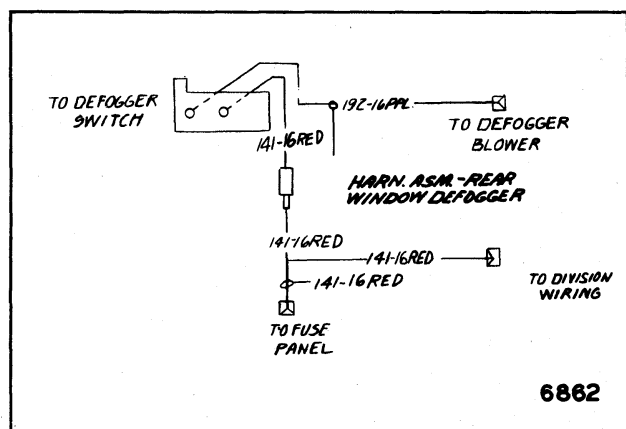


Fig. 10-71-Defogger Circuit Diagram - "X" Styles

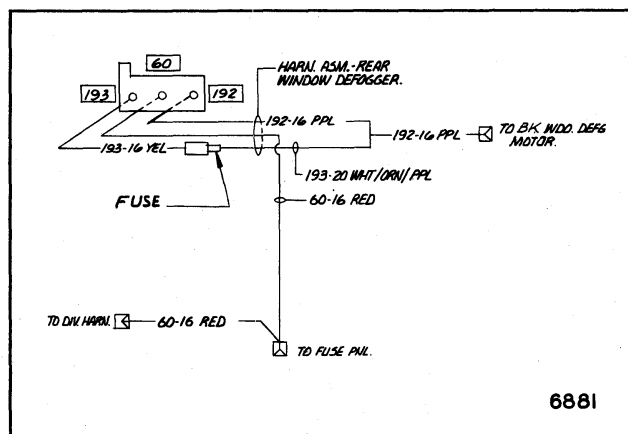


Fig. 10-72-Defogger Circuit Diagram - Chevrolet "F" Styles

blower does not operate, replace the blower as an assembly.

NOTE: If blower operates but air does not come out of outlet grille, check for obstructions at air inlet and outlet.

- If the blower motor and switch operate satisfactorily when checked, but the blower will not operate, or will not give both high and low speeds, locate and repair open or short circuit in feed wire(s) between switch connector and motor.

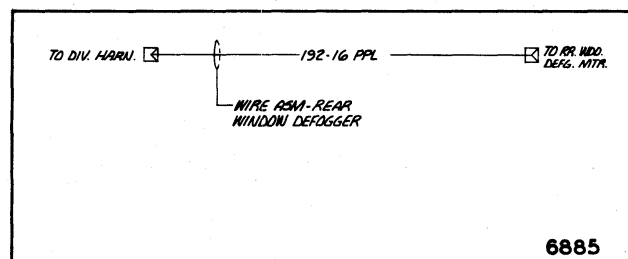


Fig. 10-73-Defogger Circuit Diagram - Pontiac "F" Styles

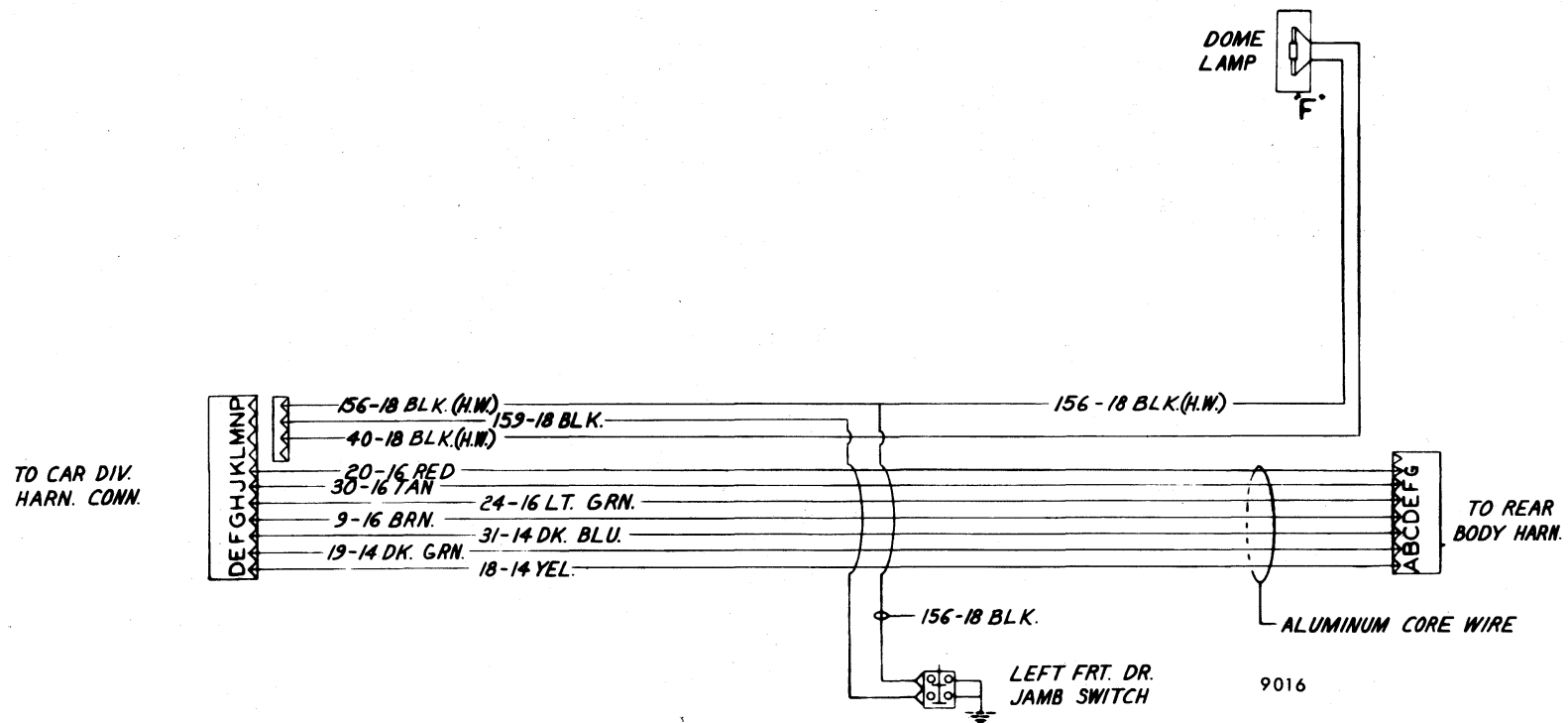


Fig. 10-74-Front Body Harness Circuit Diagram - All Chevrolet "H" Styles

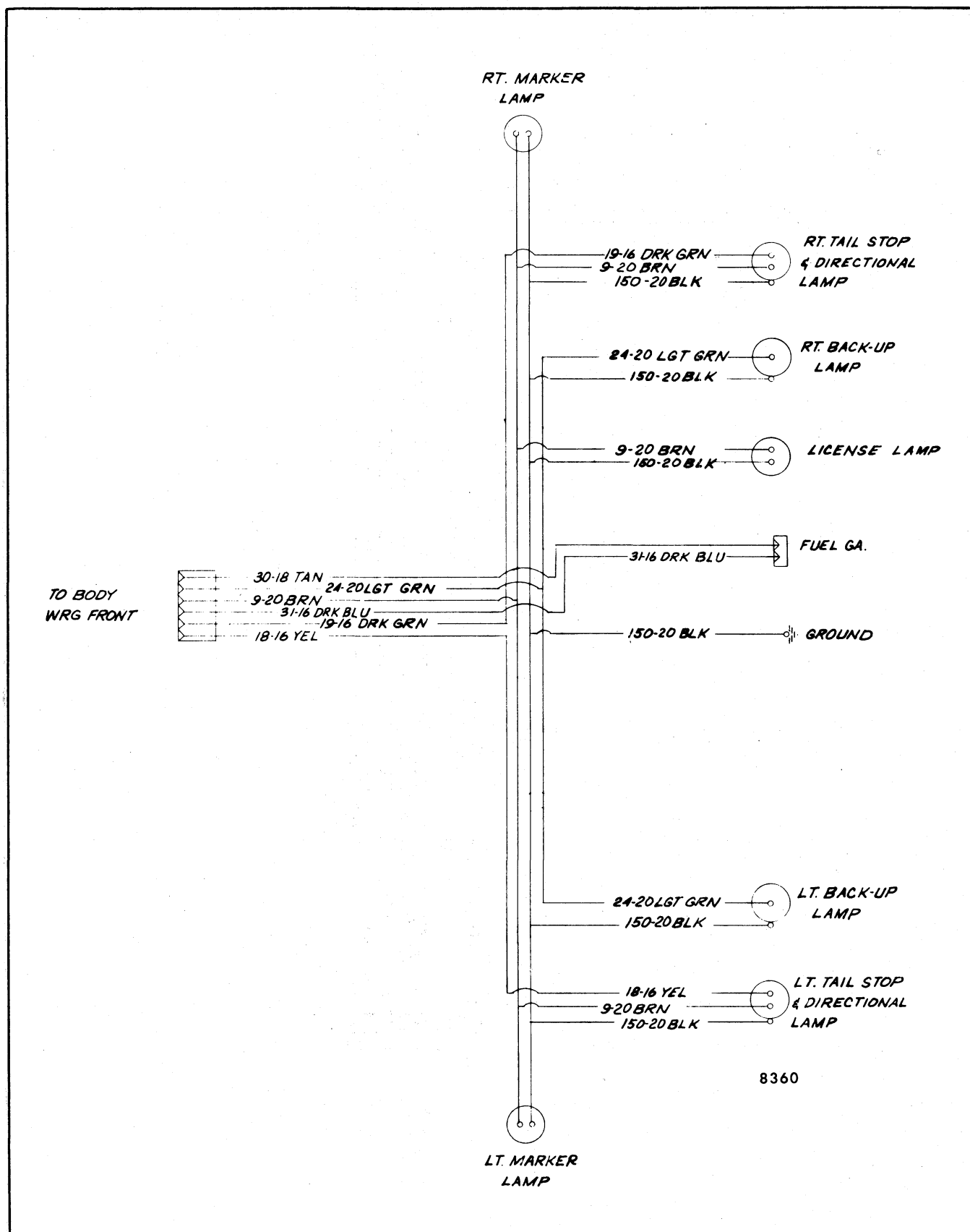


Fig. 10-75-Rear Body Harness Circuit Diagram - Chevrolet "H-07" Style

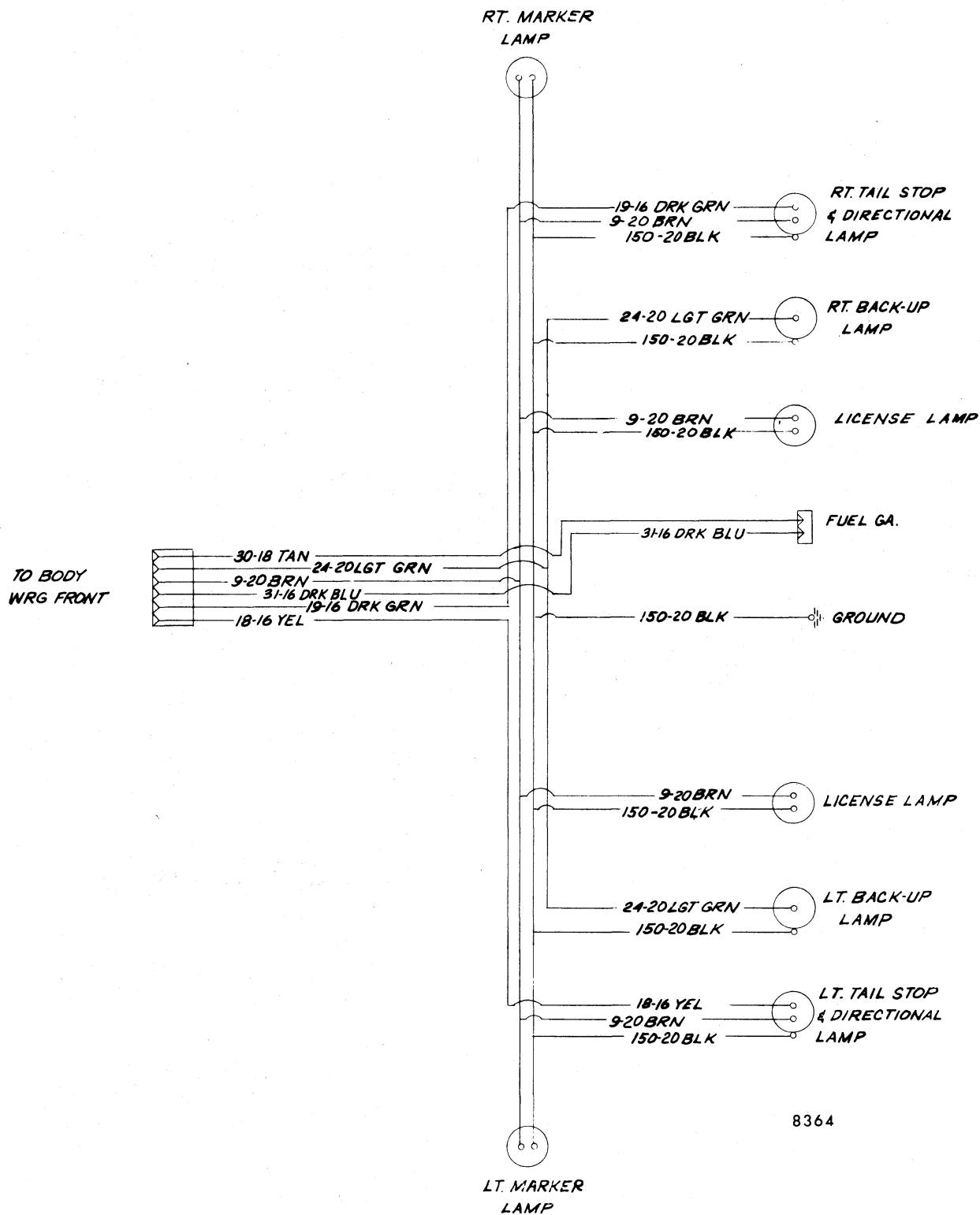
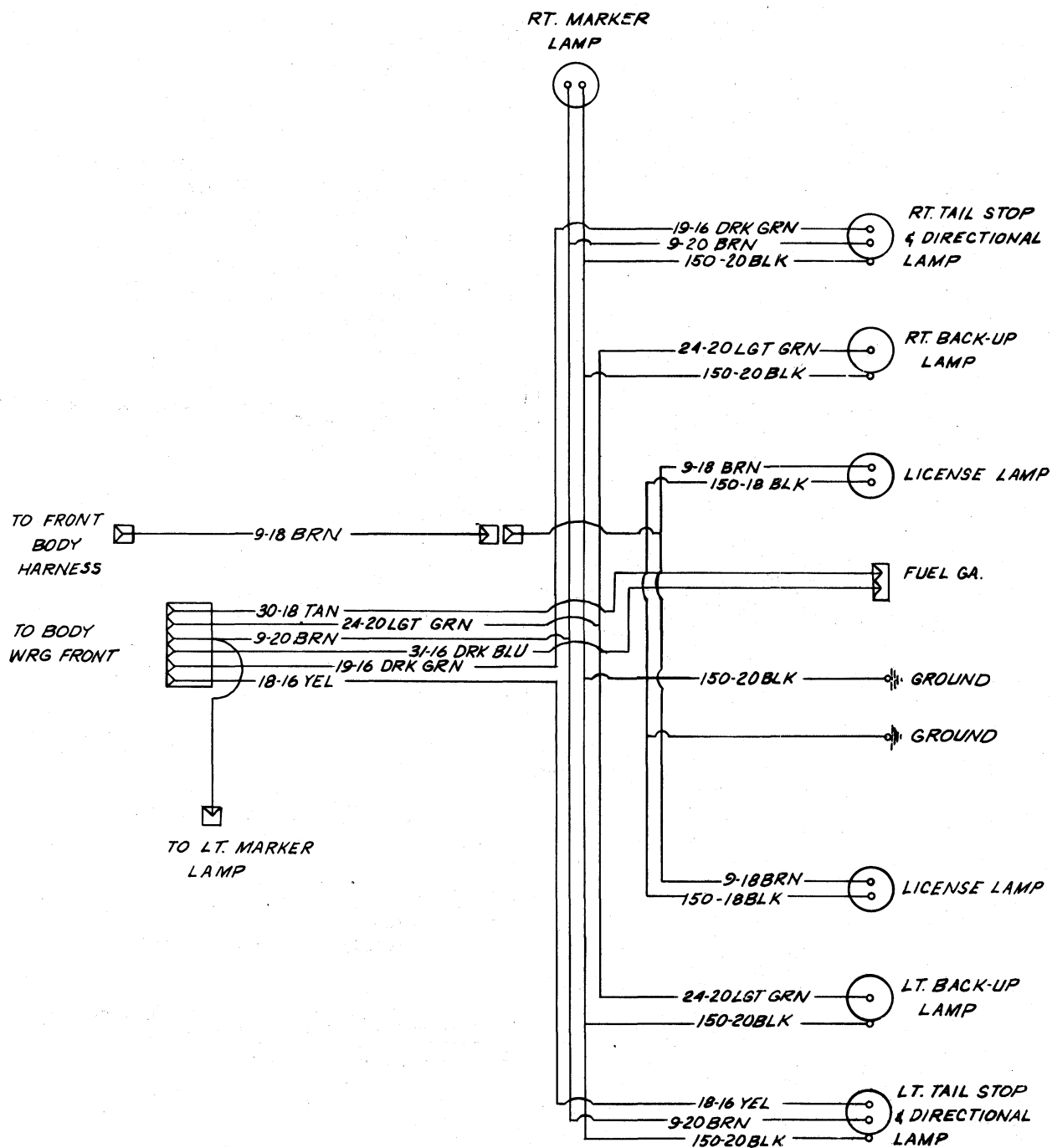


Fig. 10-76-Rear Body Harness Circuit Diagram - Chevrolet "H- 11,77" Styles



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Fig. 10-77-Rear Body Harness Circuit Diagram - Chevrolet "H-15" Style

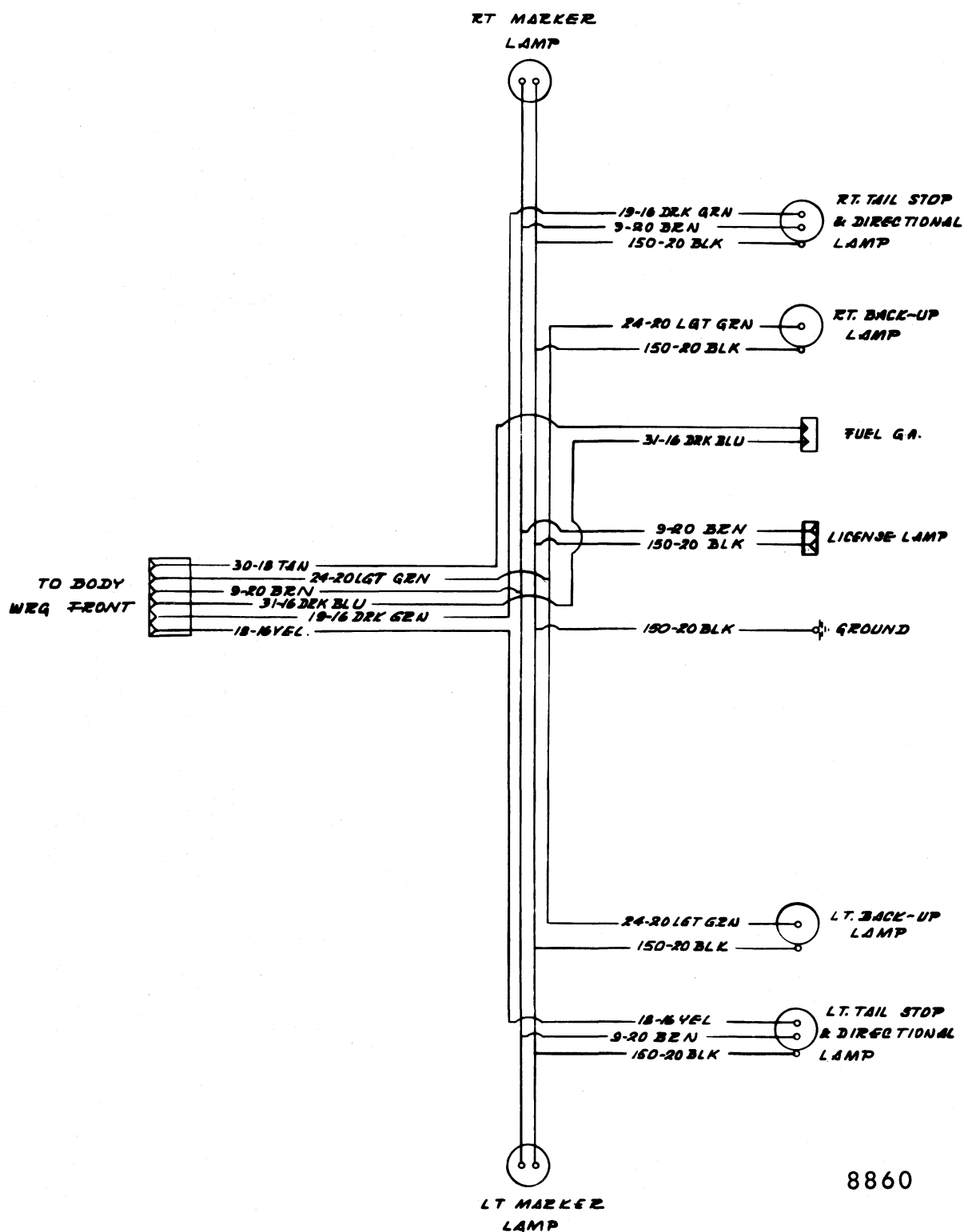


Fig. 10-78 - Rear Body Harness Circuit Diagram - Chevrolet "H-27" Style

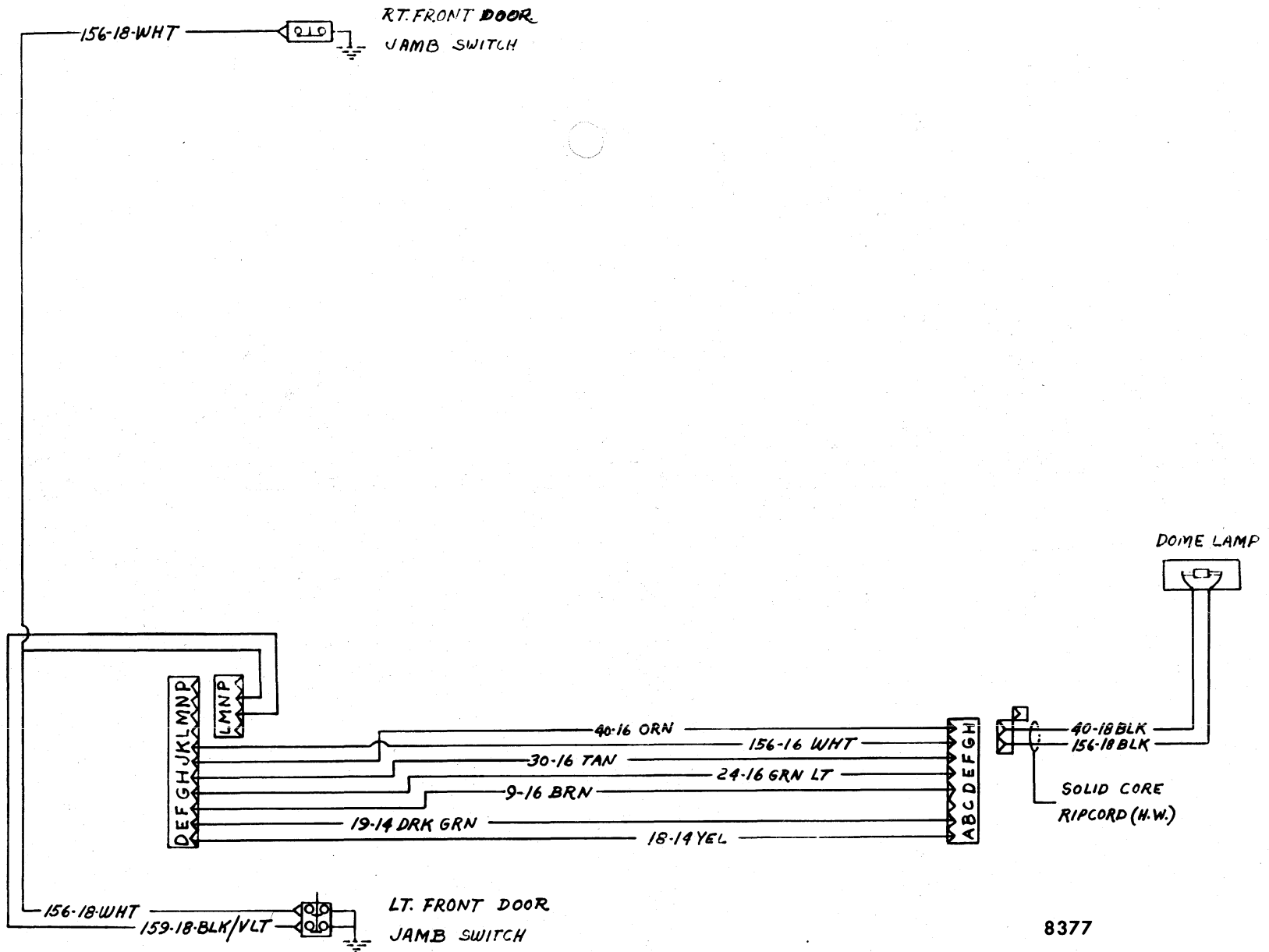
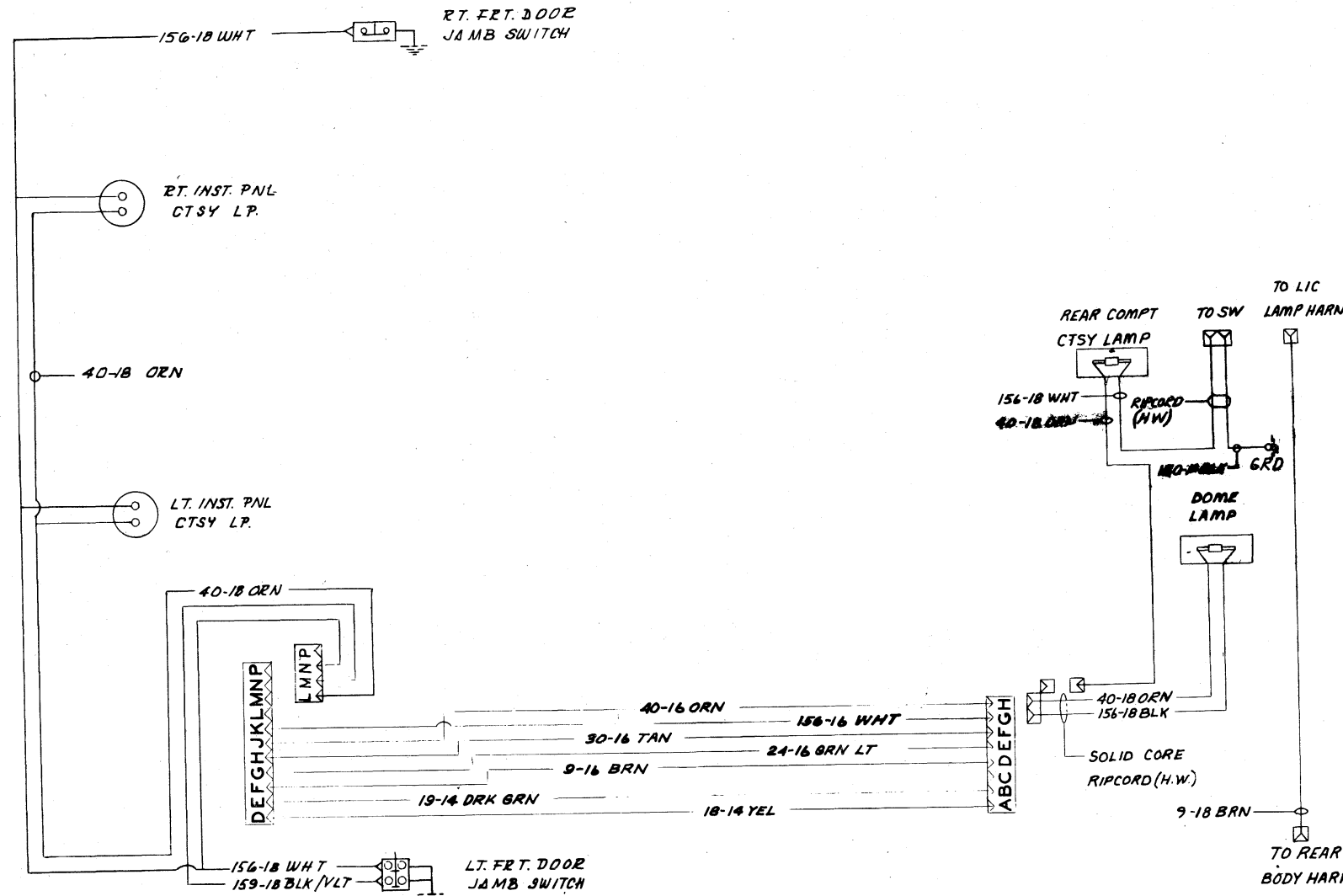


Fig. 10-79-Front Body Harness Circuit Diagram - All Chevrolet "X" Styles, Less "X-17" Style



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Fig. 10-80-Front Body Harness Circuit Diagram - Chevrolet "X-17" Style

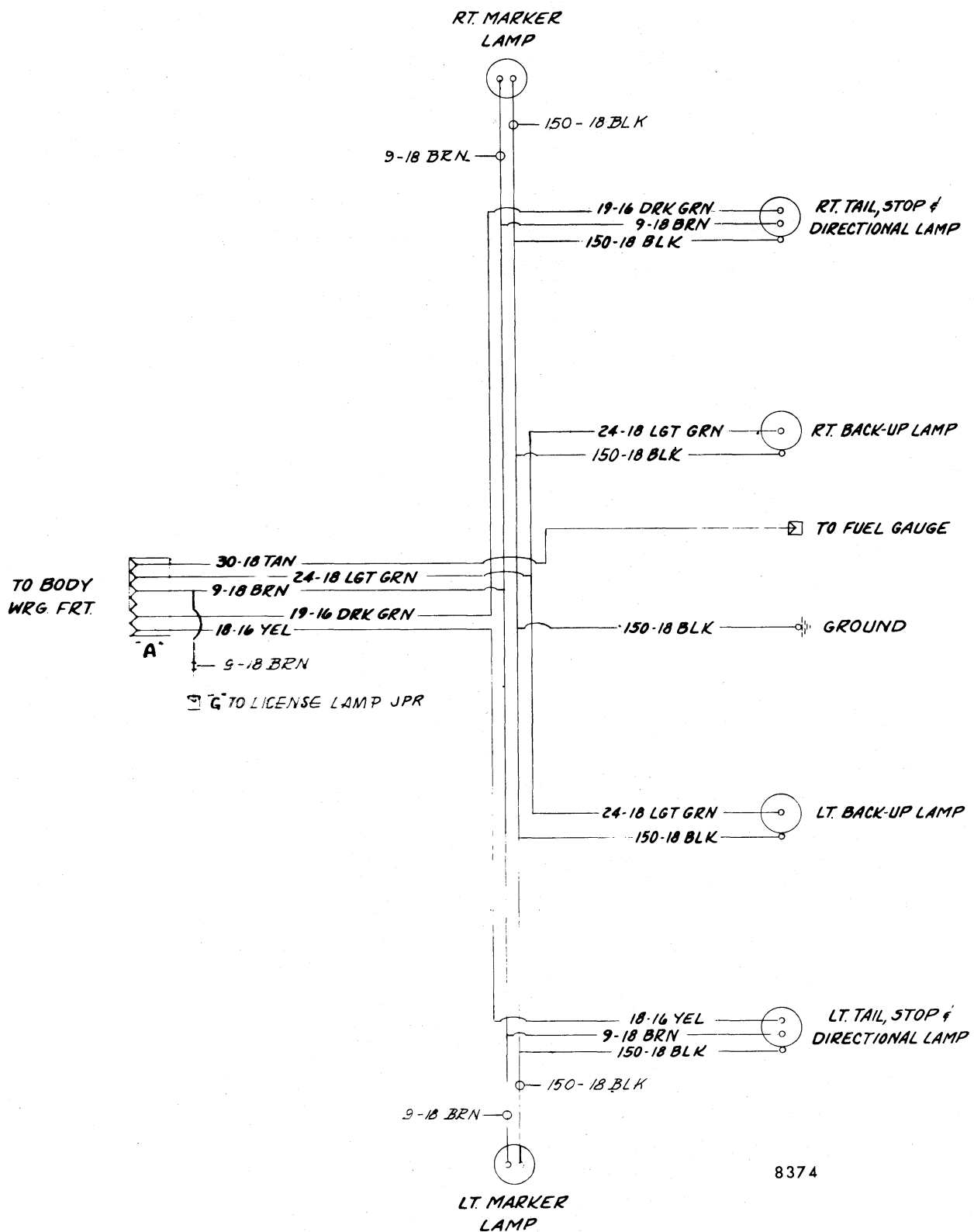
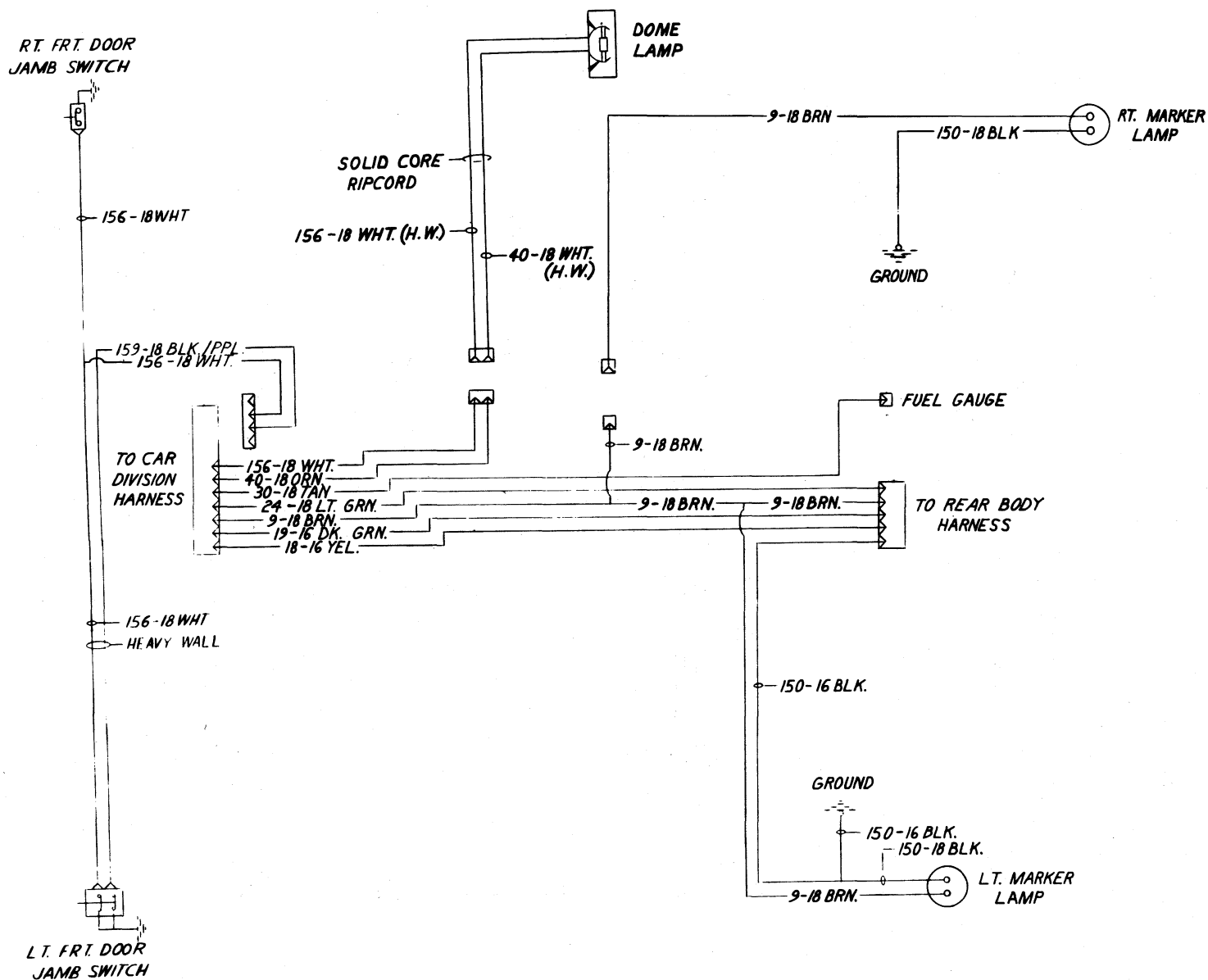
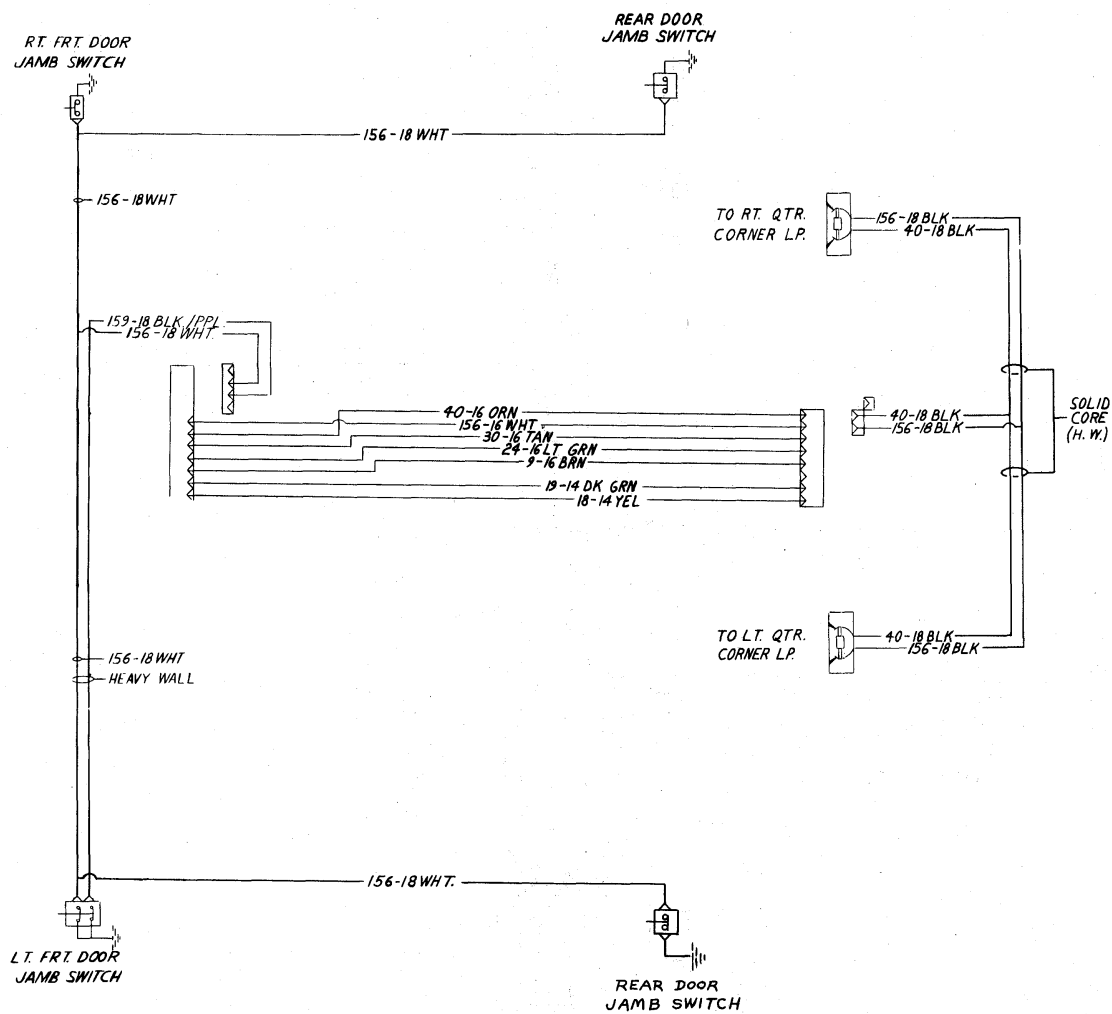


Fig. 10-81-Rear Body Harness Circuit Diagram - Chevrolet "X" Styles

Fig. 10-82-Front Body Harness Circuit Diagram - Chevrolet "A-80" Style



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Fig. 10-83-Front Body Harness Circuit Diagram - Chevrolet "A" Styles

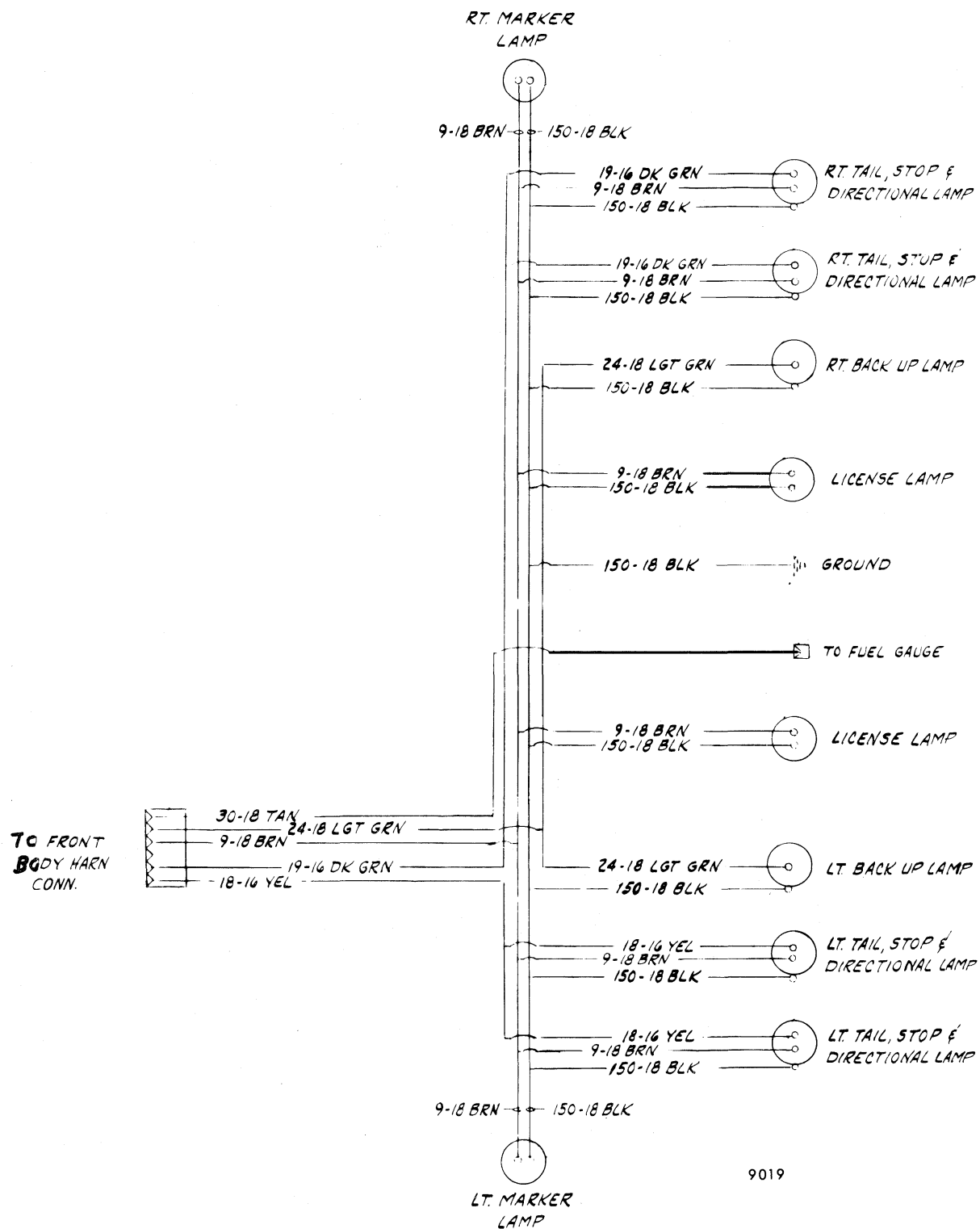


Fig. 10-84-Rear Body Harness Circuit Diagram - Chevrolet "A-29,37" Styles

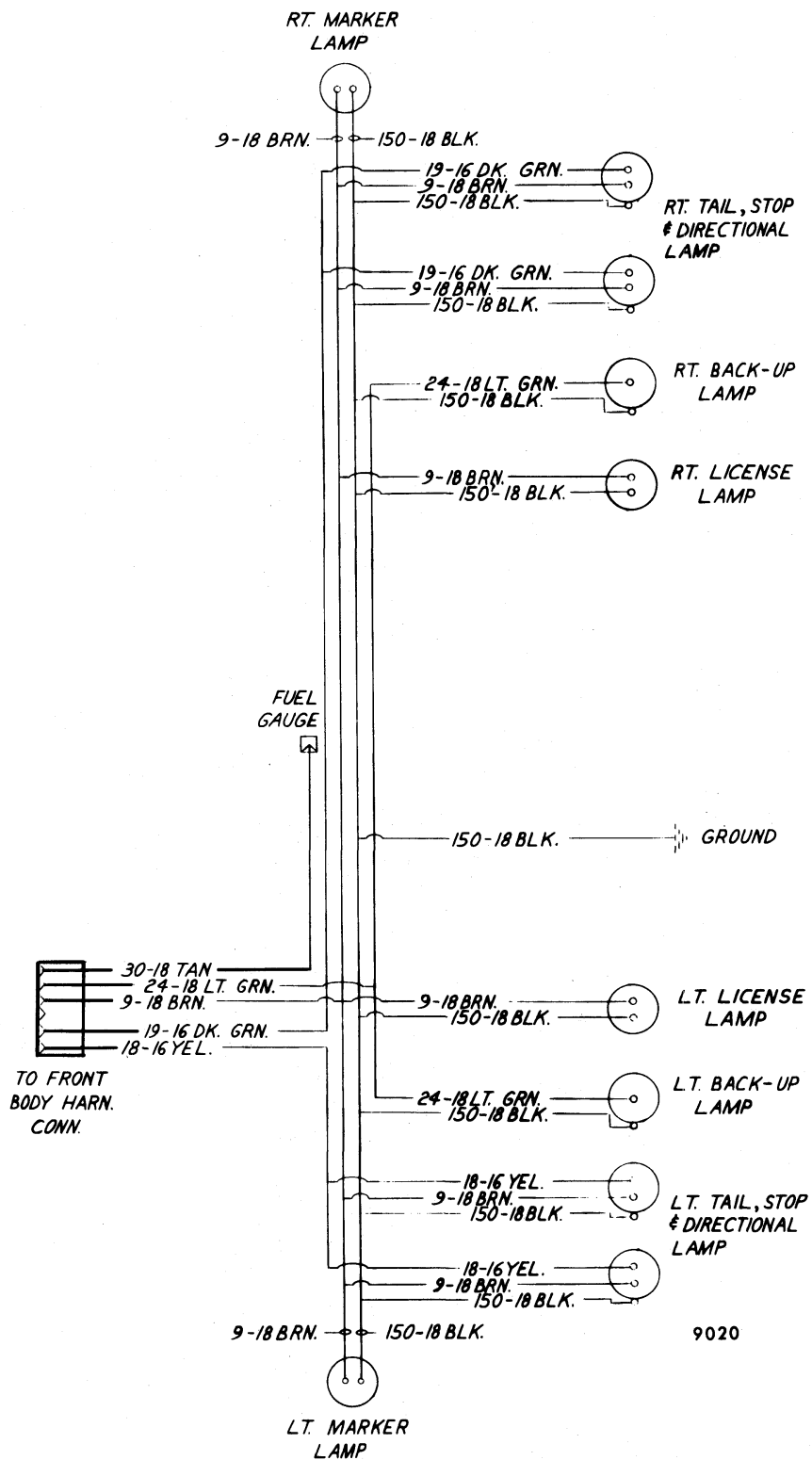
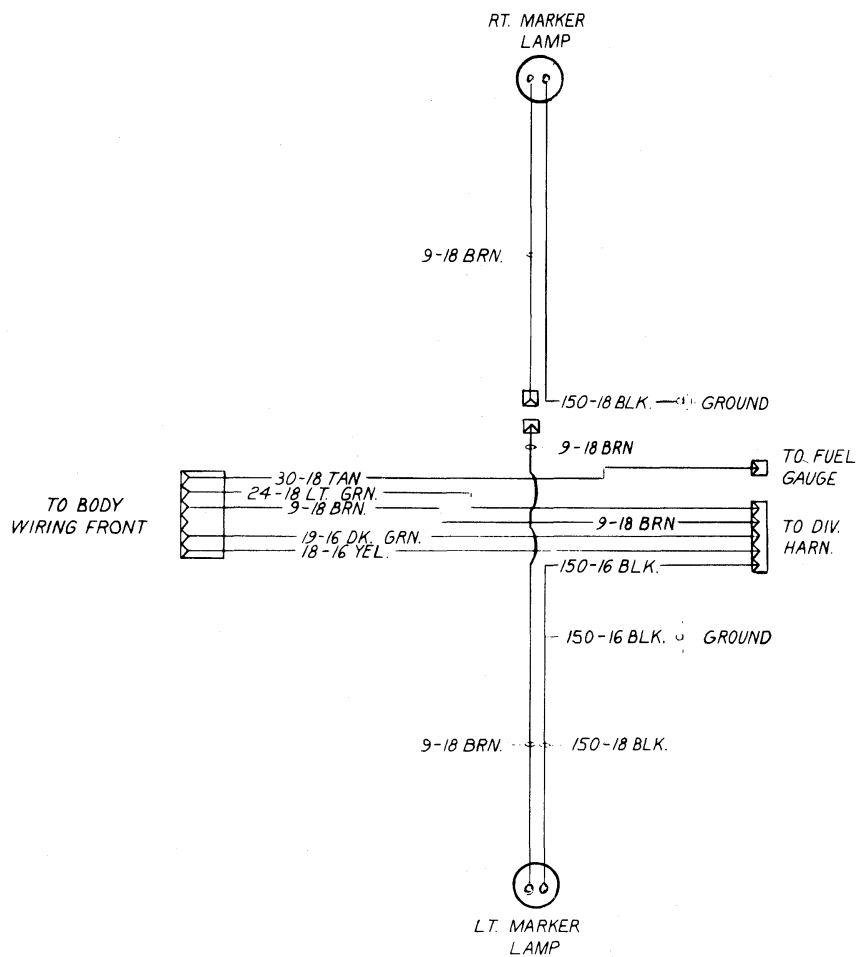
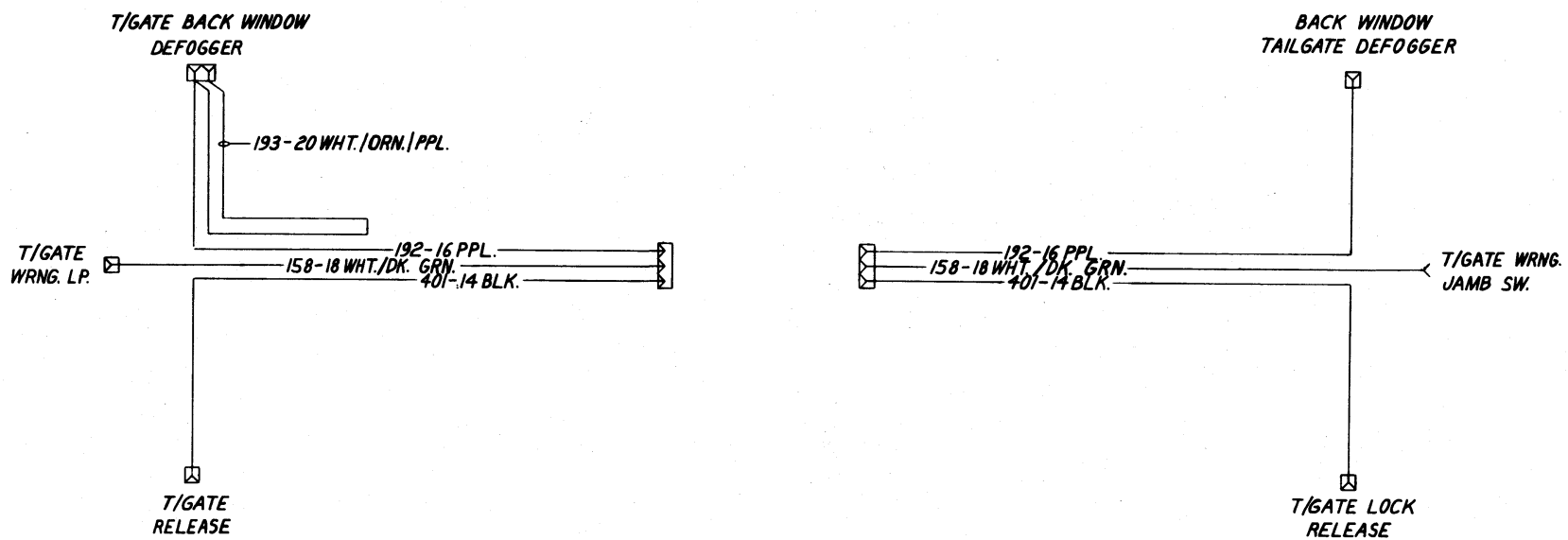


Fig. 10-85-Rear Body Harness Circuit Diagram - Chevrolet "A-57" Styles



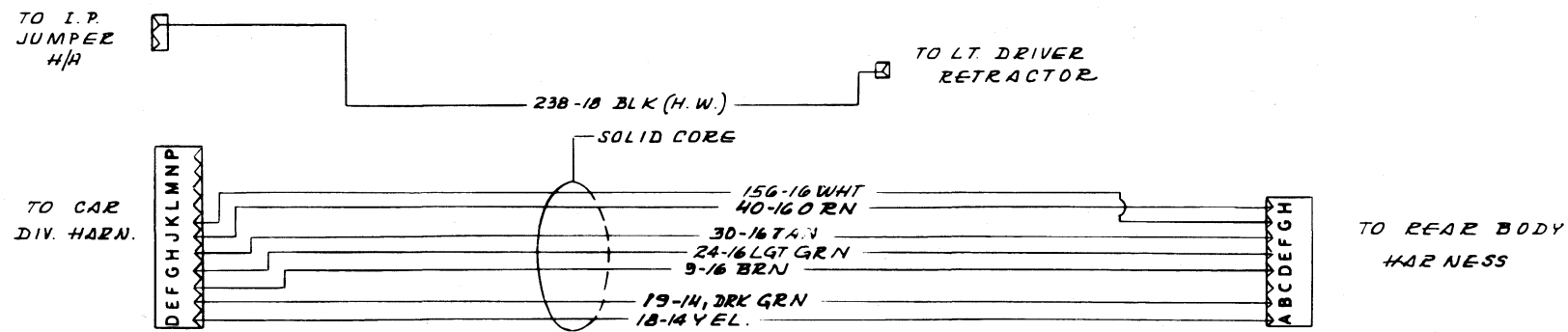
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Fig. 10-86-Rear Body Harness Circuit Diagram - Chevrolet "A-35" Style



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Fig. 10-87-Tailgate Harness Circuit Diagram - Chevrolet "A-35" Style



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Fig. 10-88-Front Body Harness Circuit Diagram - Chevrolet "F" Styles

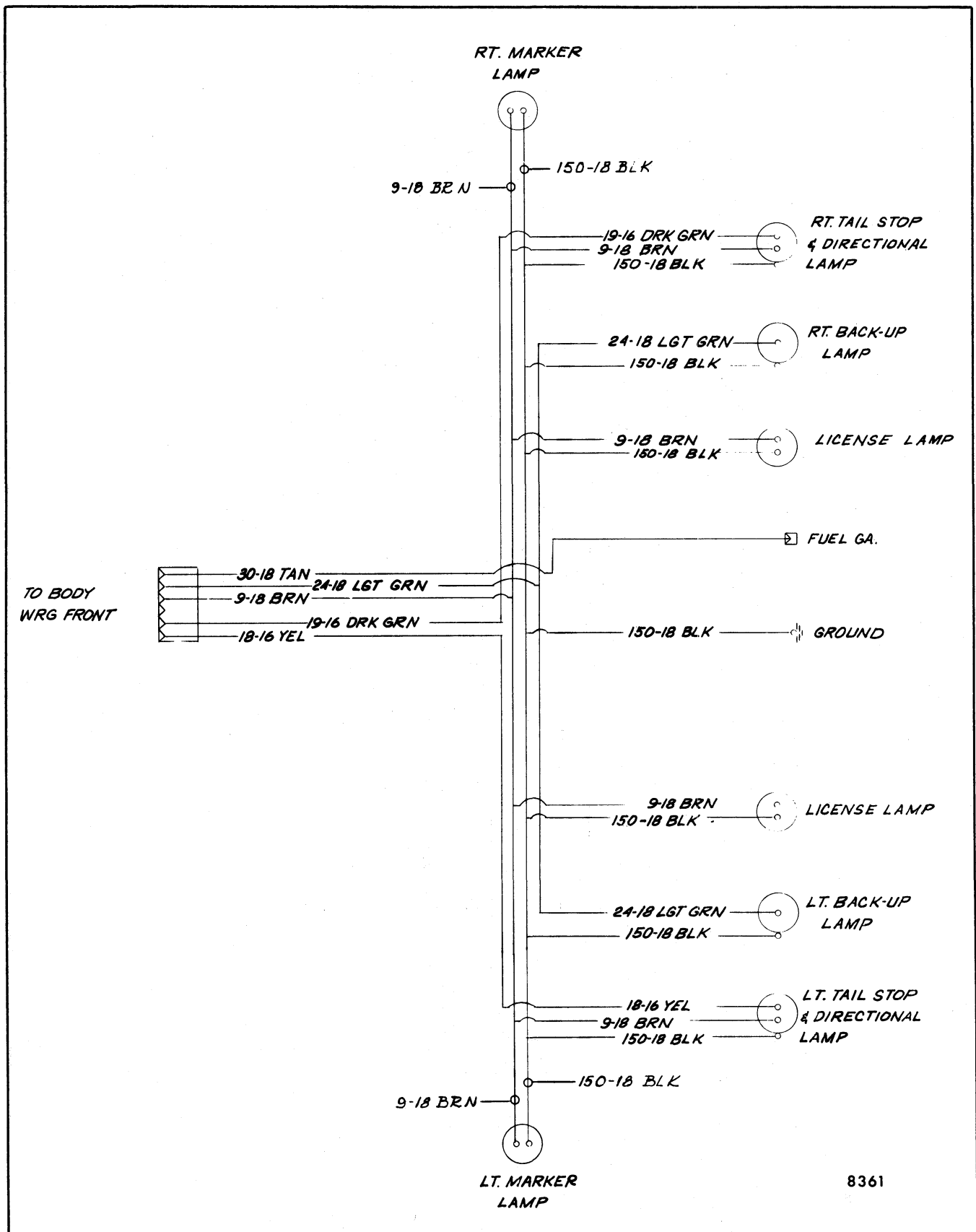


Fig. 10-89-Rear Body Harness Circuit Diagram - Chevrolet "F" Styles

Fig. 10-90-Front Body Harness Circuit Diagram - Chevrolet "B" Style

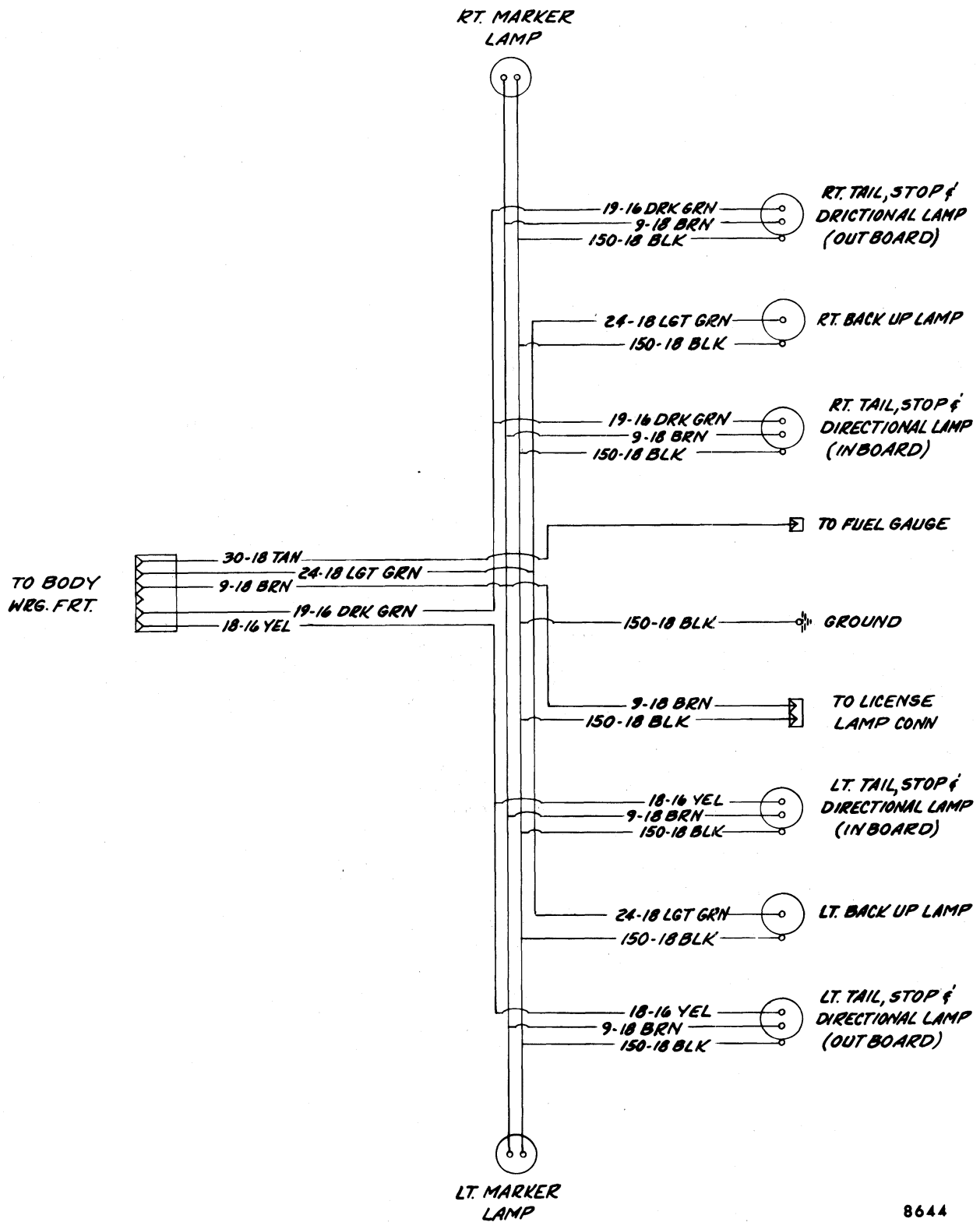


Fig. 10-91-Rear Body Harness Circuit Diagram - Chevrolet "B" Styles, Less Wagons

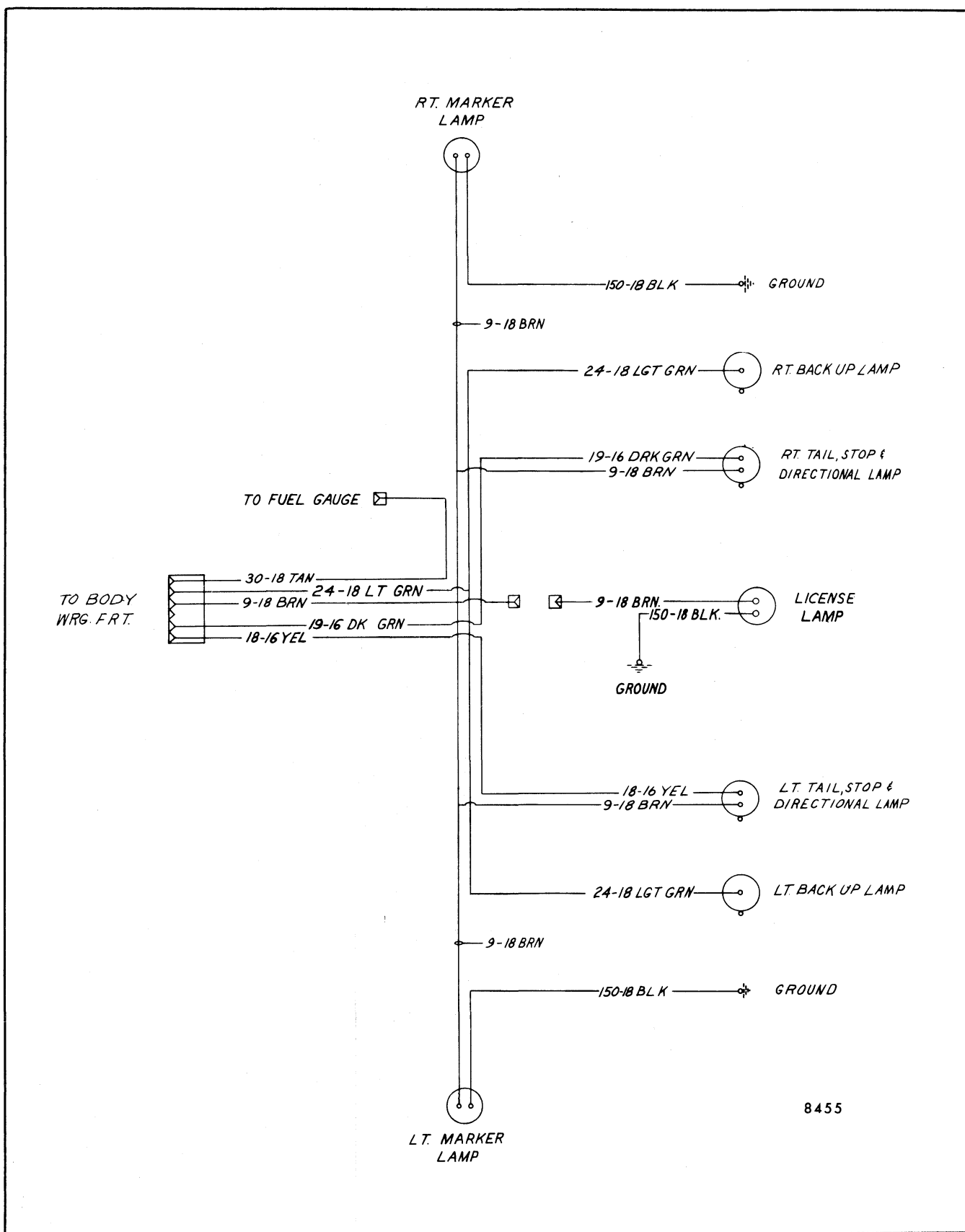


Fig. 10-92-Rear Body Harness Circuit Diagram - Chevrolet "B-35 and 45" Styles

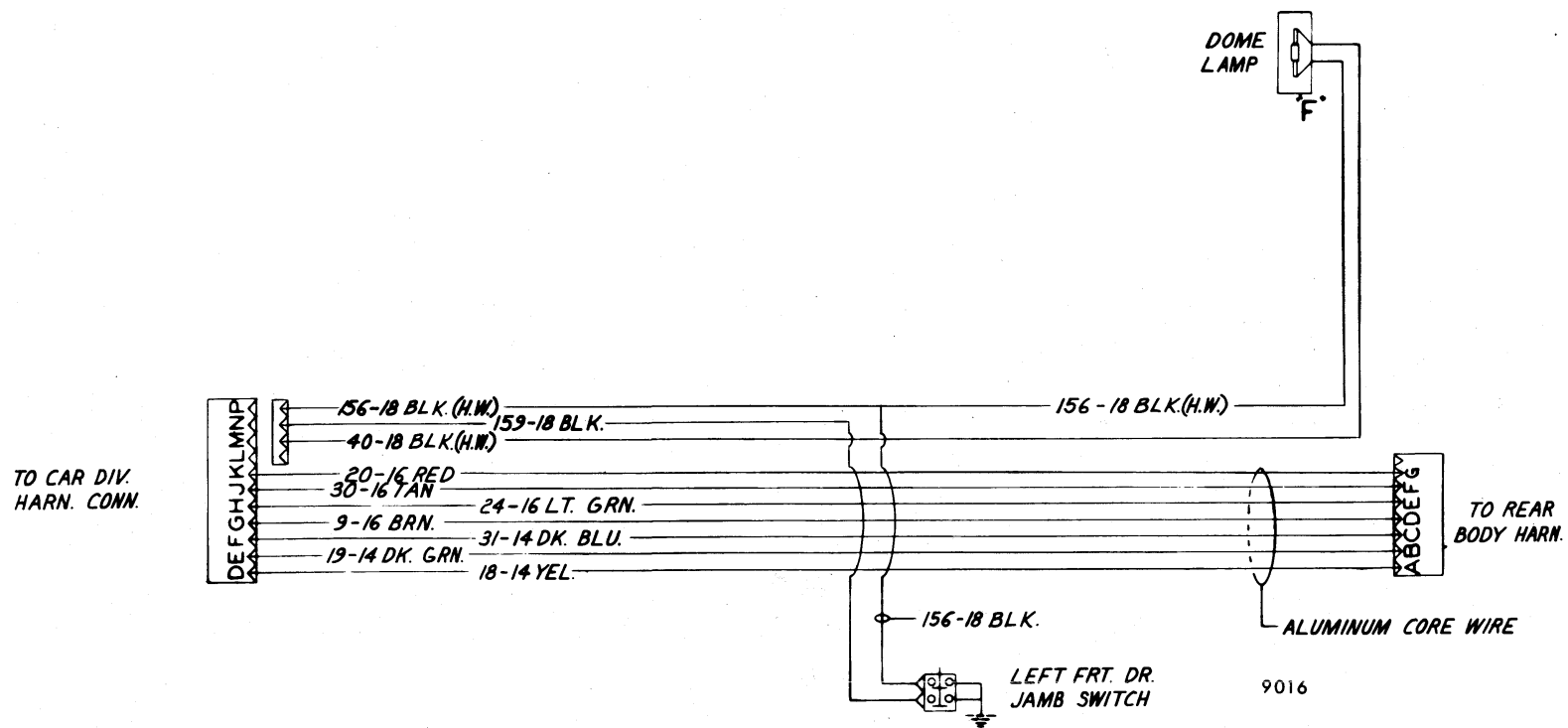


Fig. 10-93-Front Body Harness Circuit Diagram - Pontiac "H" Styles

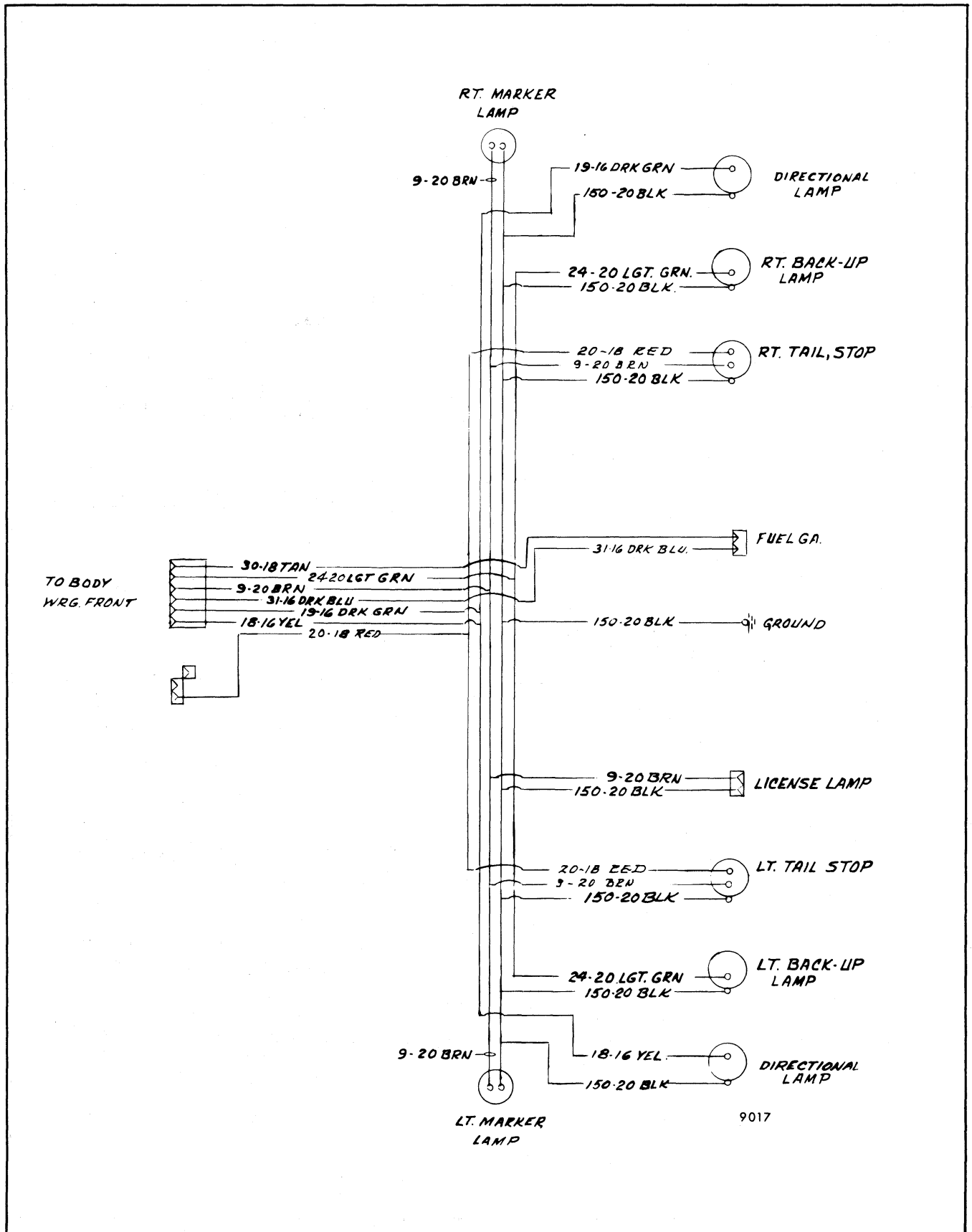


Fig. 10-94-Rear Body Harness Circuit Diagram - Pontiac "H-11,77" Styles

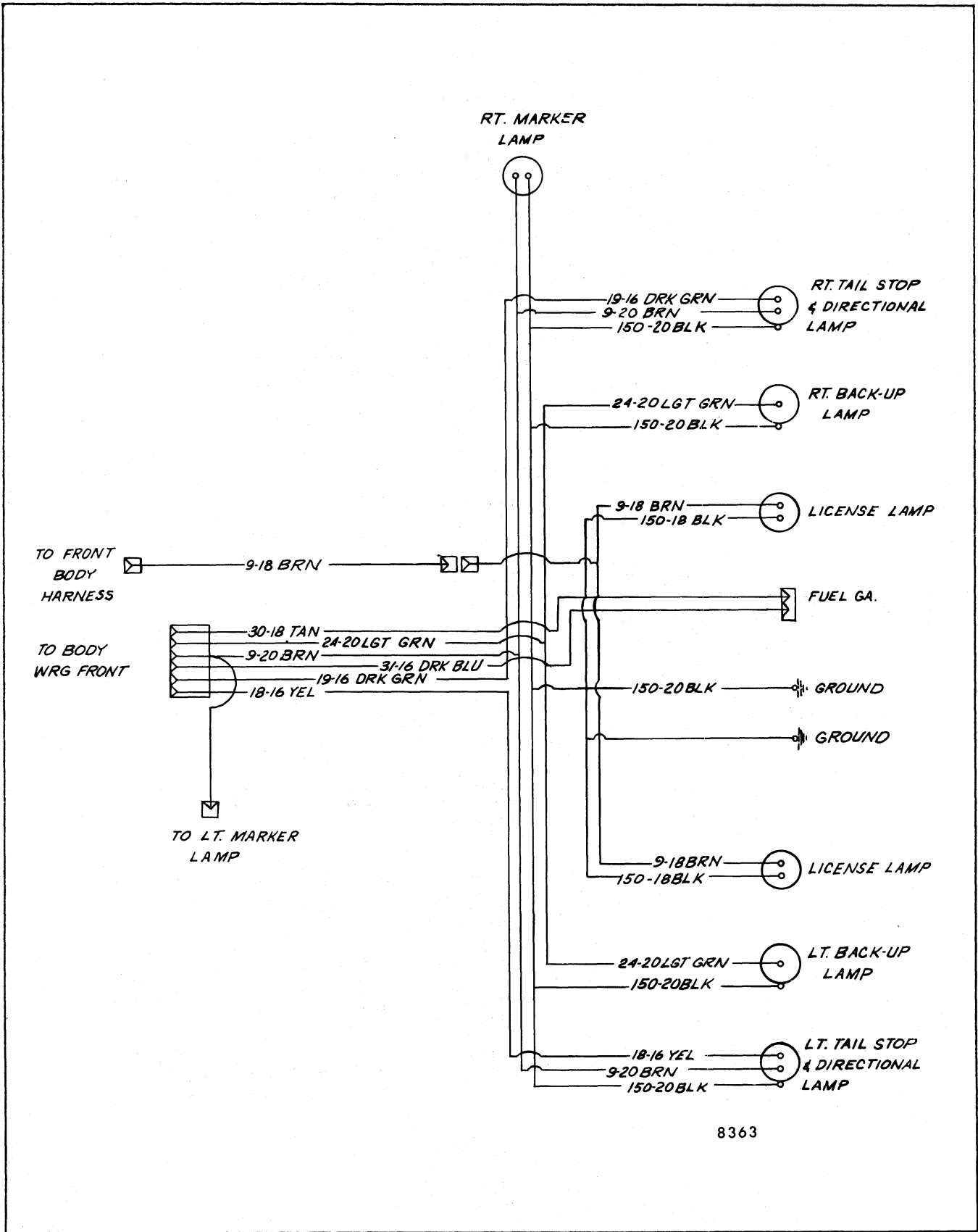


Fig. 10-95-Rear Body Harness Circuit Diagram - Pontiac "H-15" Style

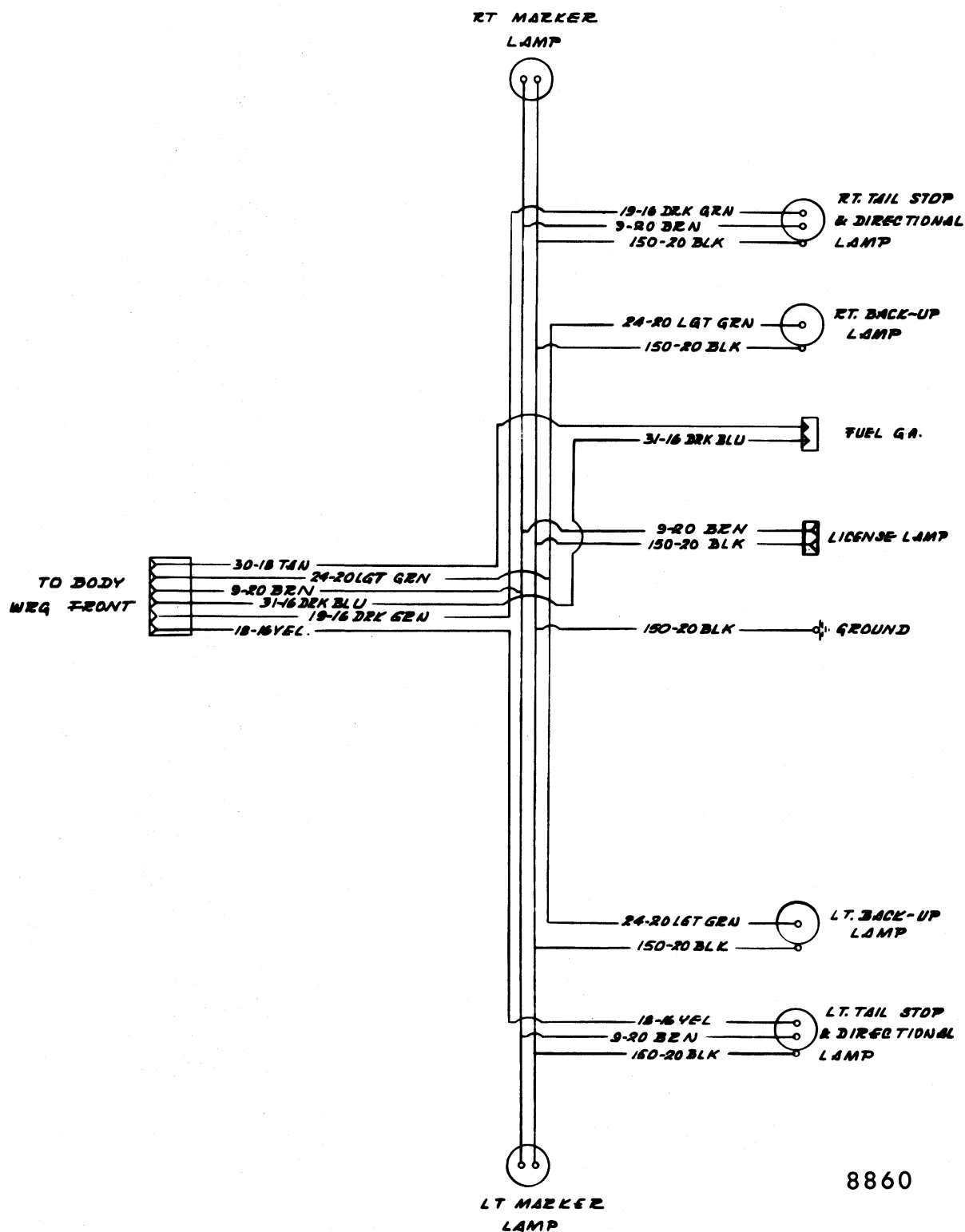


Fig. 10-96-Rear Body Harness Circuit Diagram - Pontiac "H-27" Style

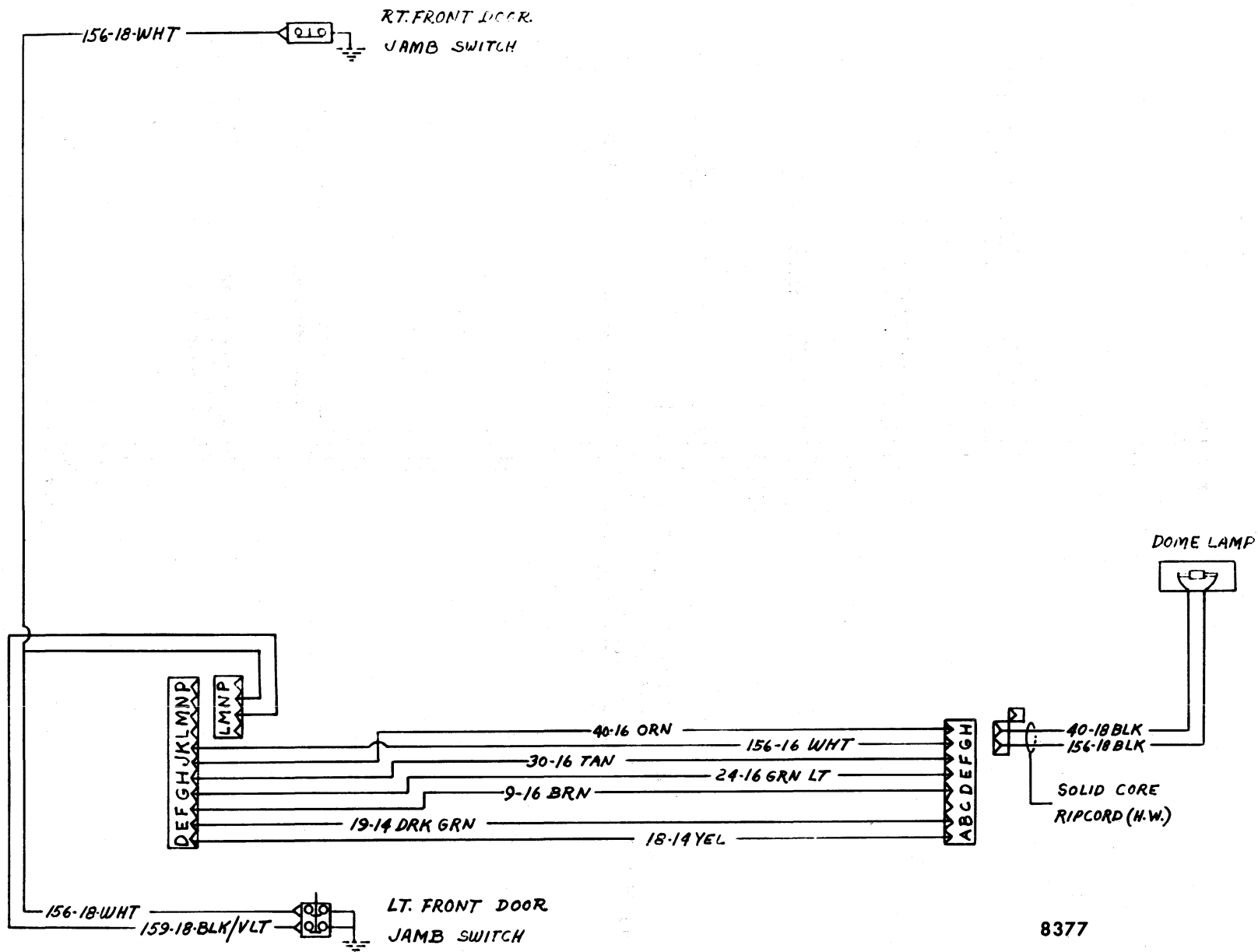
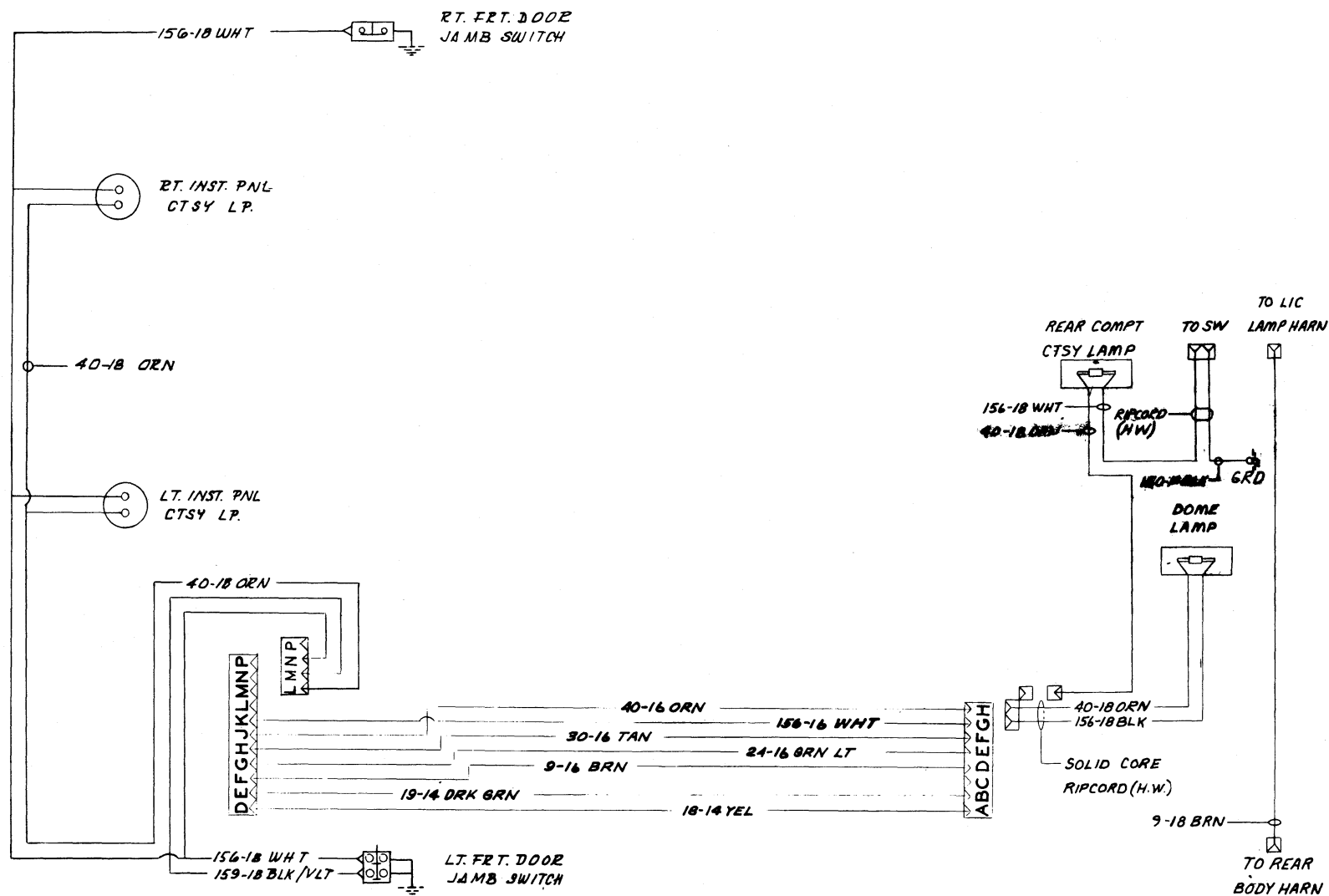


Fig. 10-97-Front Body Harness Circuit Diagram - Pontiac "X" Styles, Less "X-17" Style

Fig. 10-98-Front Body Harness Circuit Diagram - Pontiac "X-17" Style



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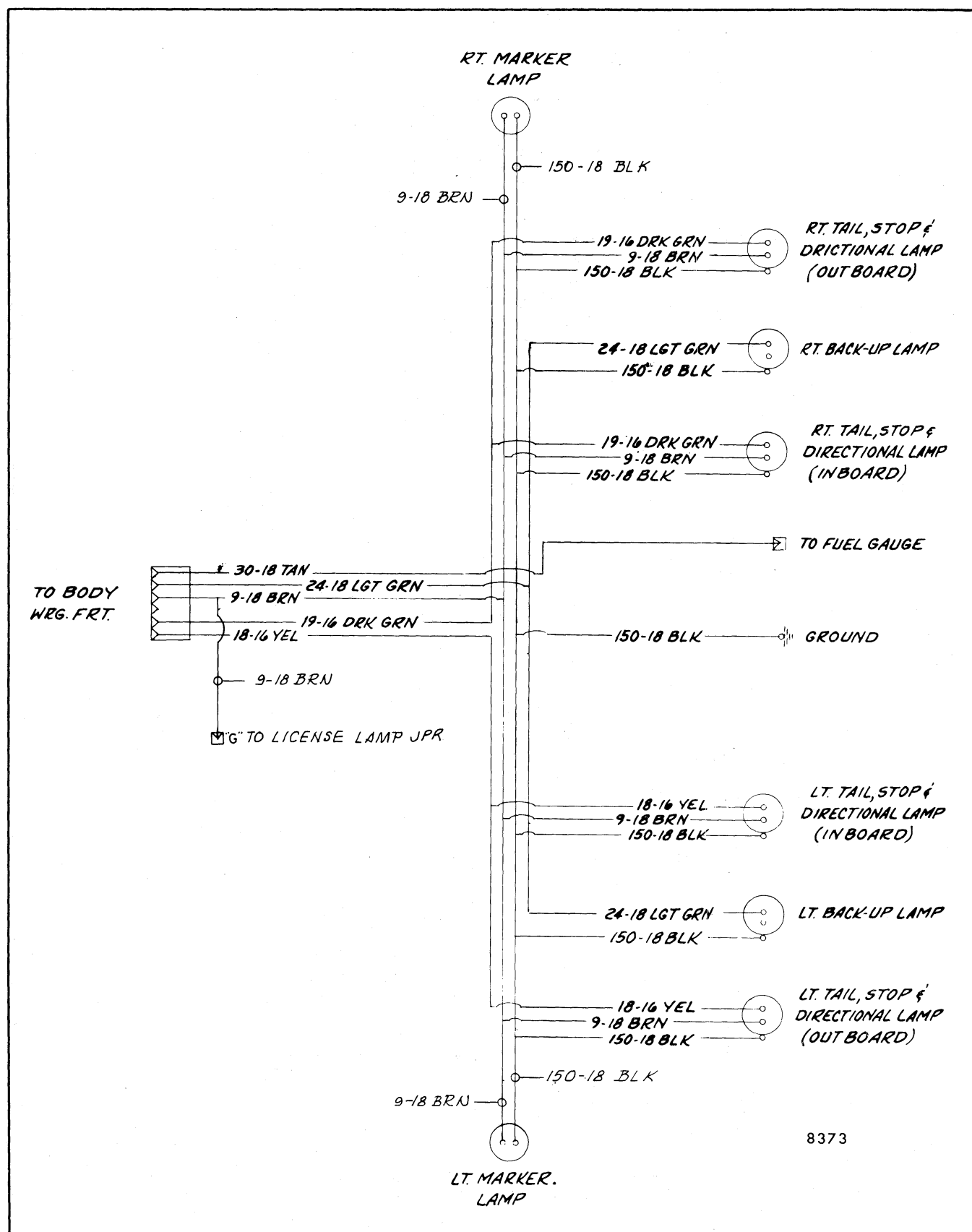
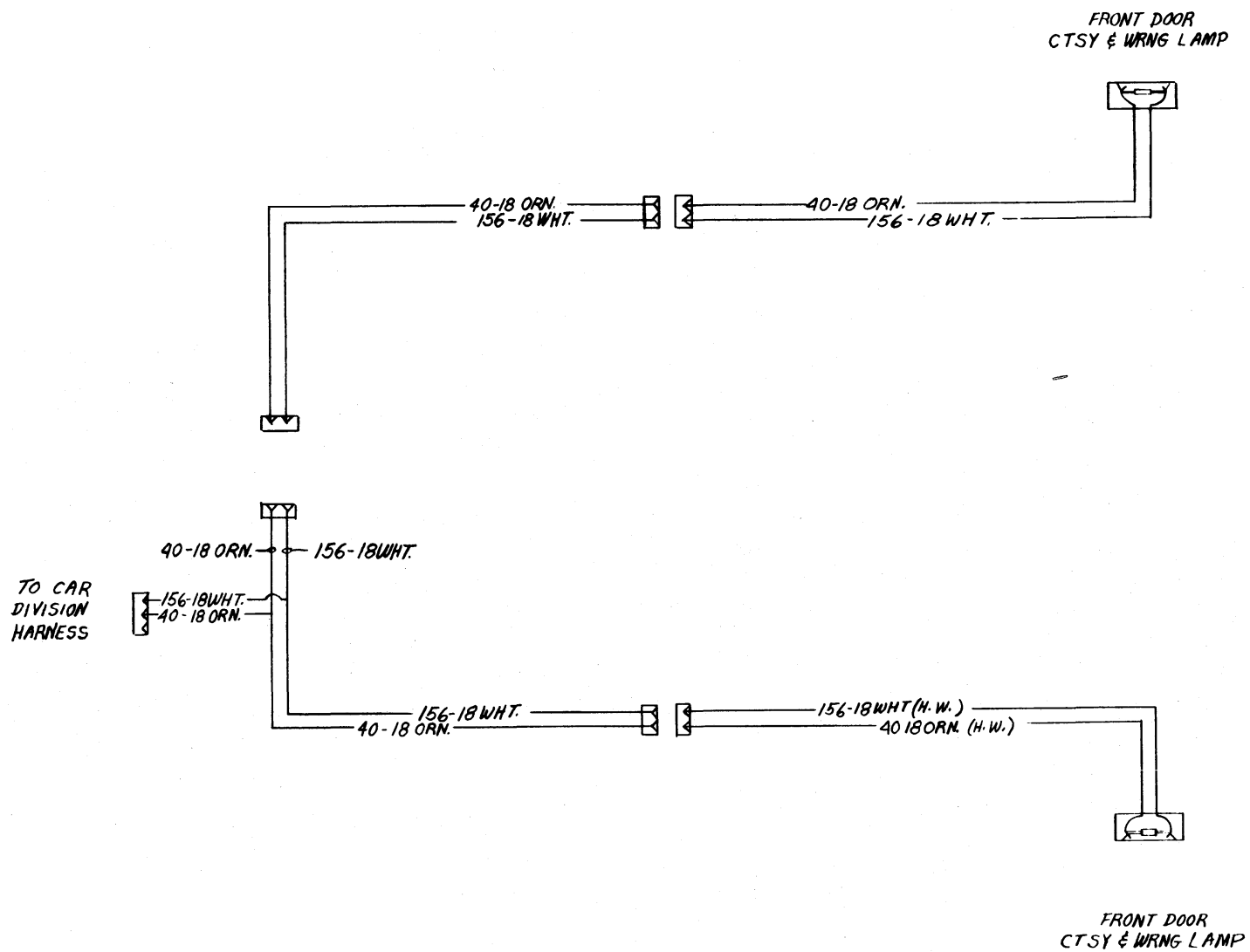


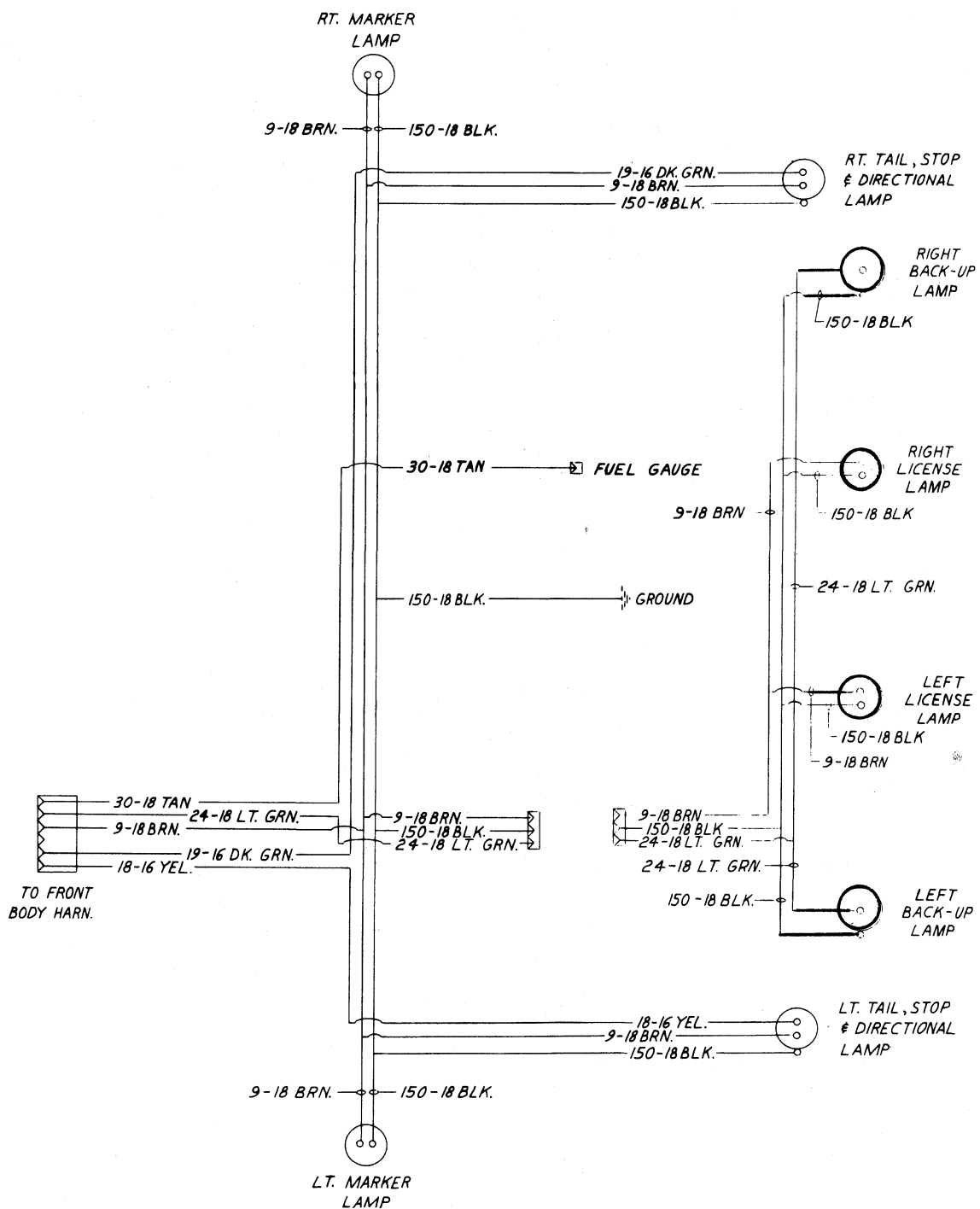
Fig. 10-99-Rear Body Harness Circuit Diagram - Pontiac "X" Styles

Fig. 10-100-Front Body Harness Circuit Diagram - Pontiac "A" Styles



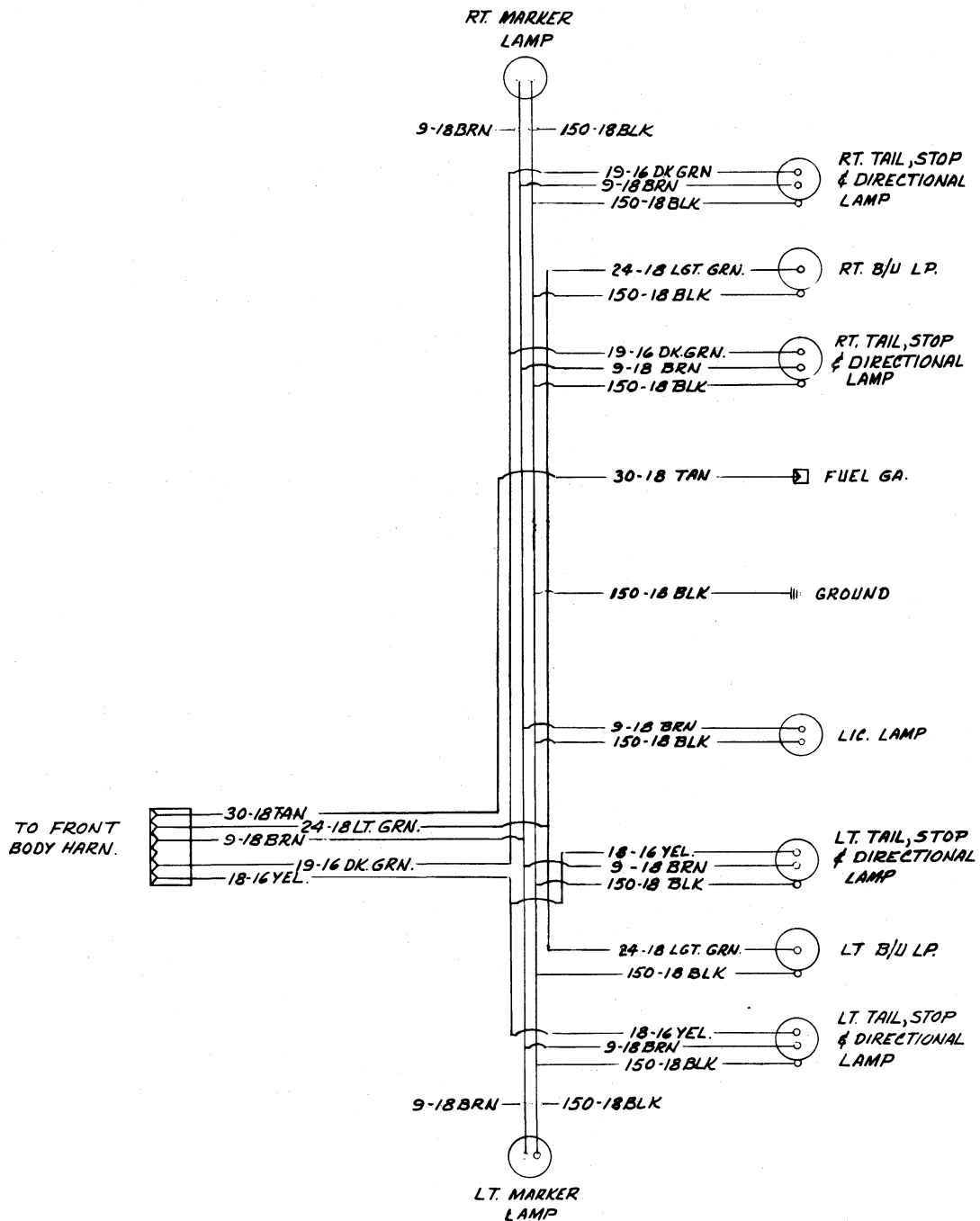
8118

Fig. 10-101-Front Door Courtesy Lamp Circuit Diagram - Pontiac "A-57" Style



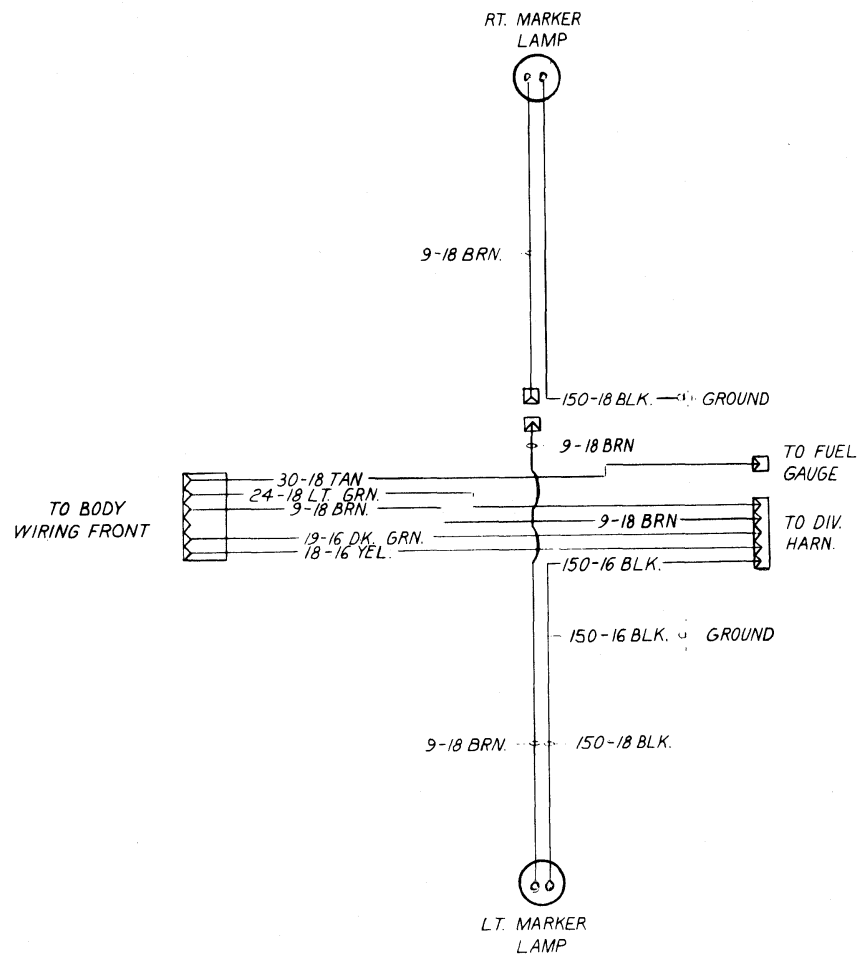
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Fig. 10-102-Rear Body Harness Circuit Diagram - Pontiac "A-29,37" Styles



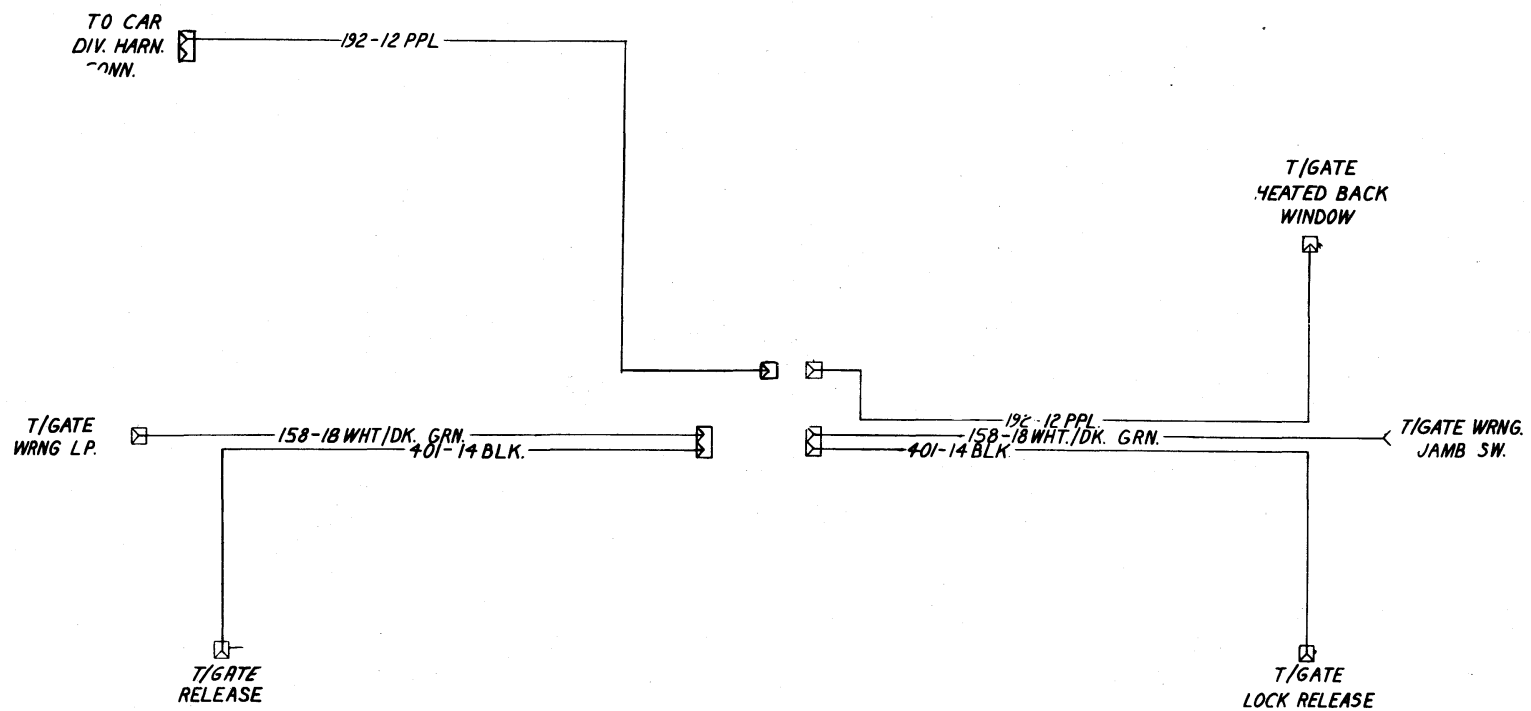
9014

Fig. 10-103-Rear Body Harness Circuit Diagram - Pontiac "A-57" Styles



8106

Fig. 10-104-Rear Body Harness Circuit Diagram - Pontiac "A-35" Style



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Fig. 10-105-Tailgate Harness Circuit Diagram - Pontiac "A-35" Style



Fig. 10-107-Front Body Harness Circuit Diagram - Pontiac "B-47" Styles

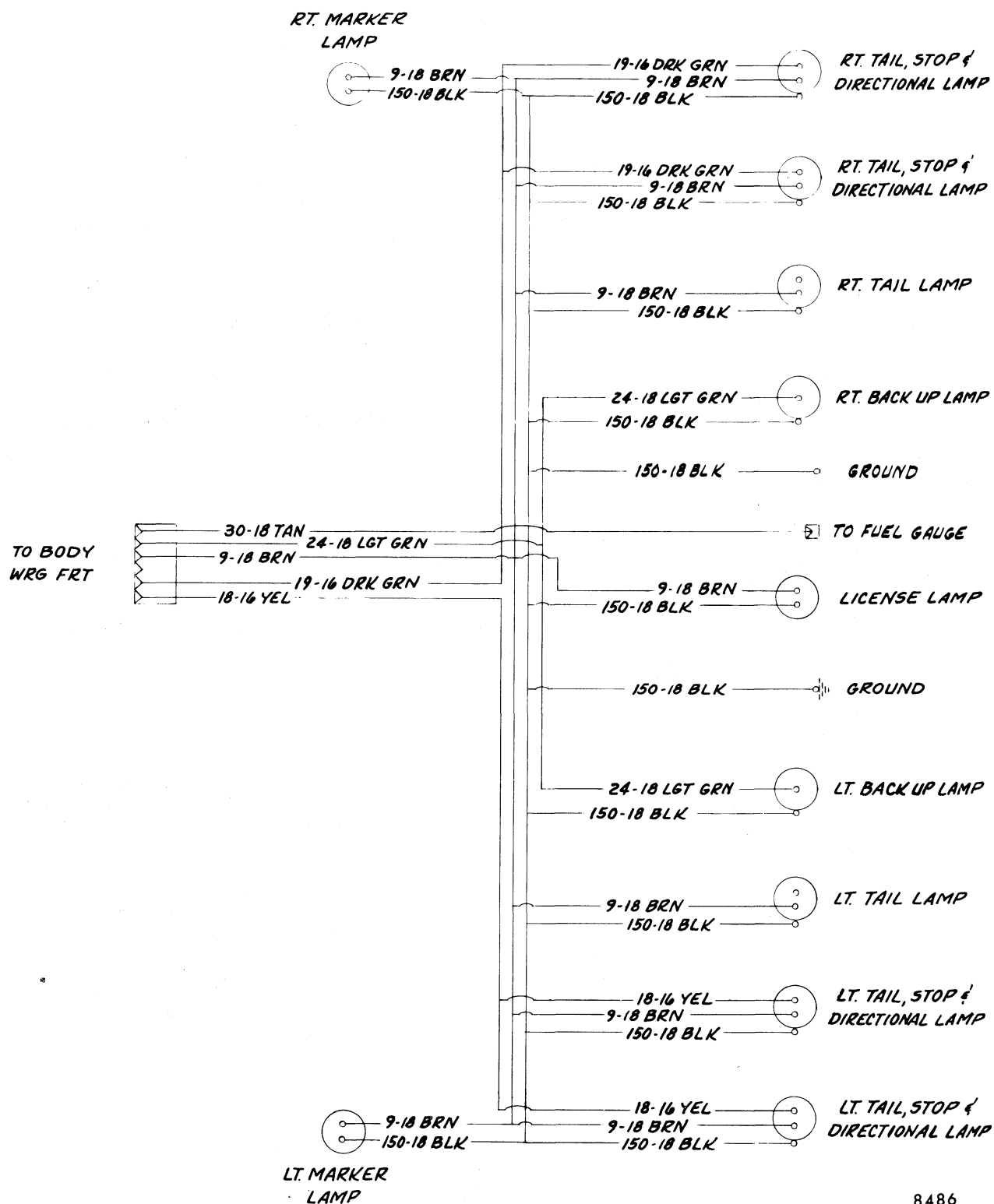
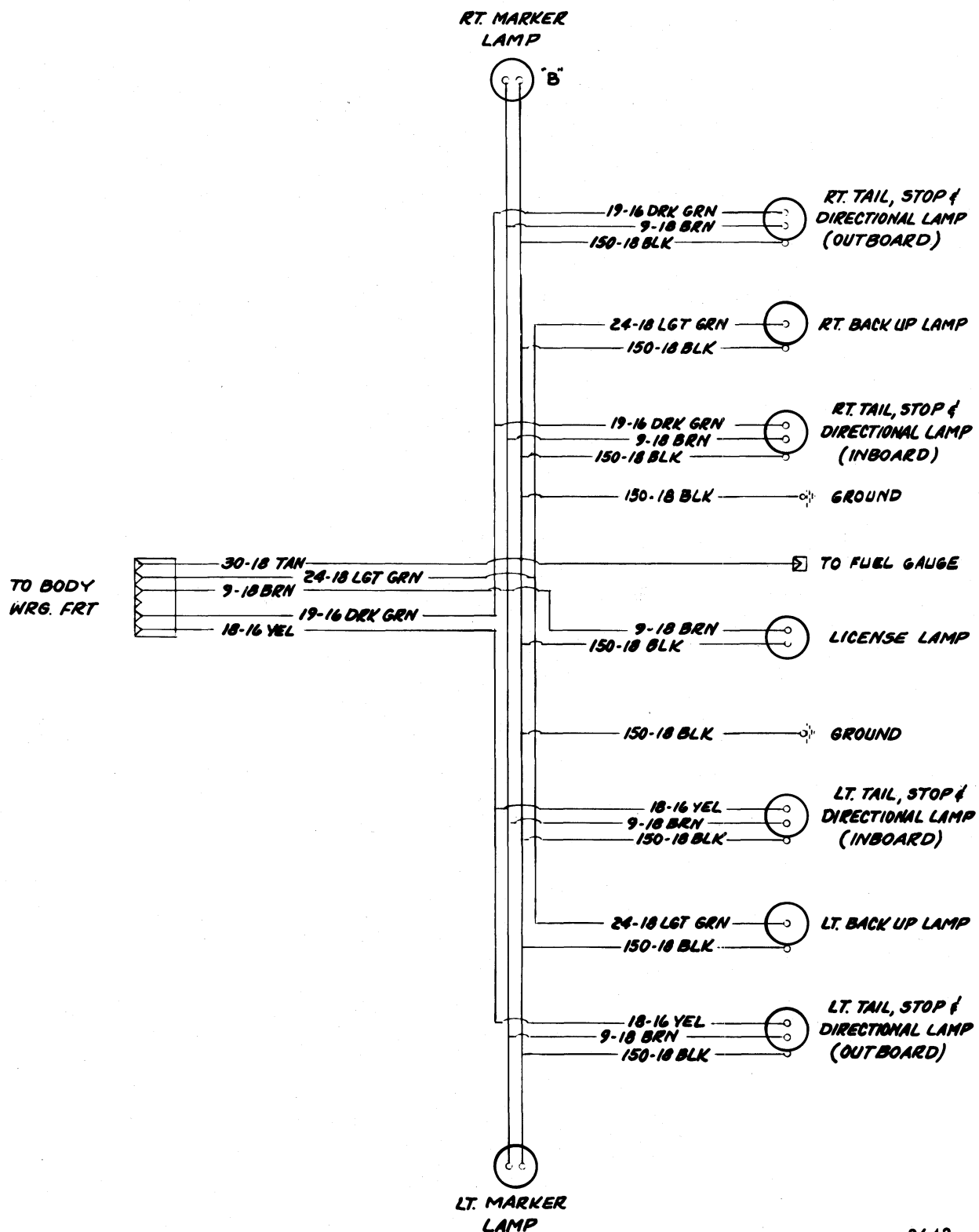


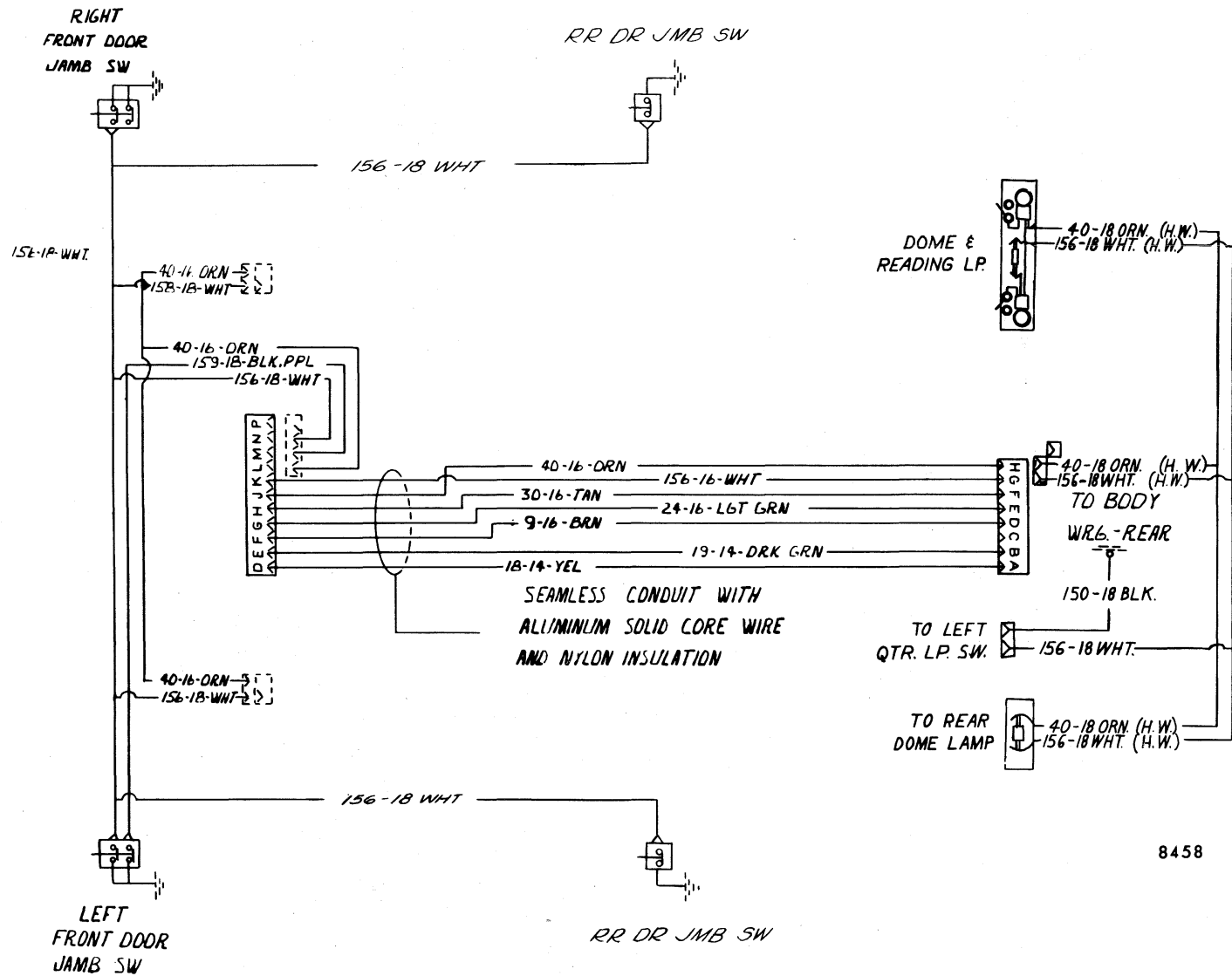
Fig. 10-108-Rear Body Harness Circuit Diagram - Pontiac "B-47 and 49" Styles

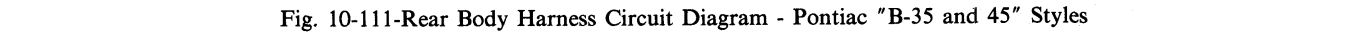


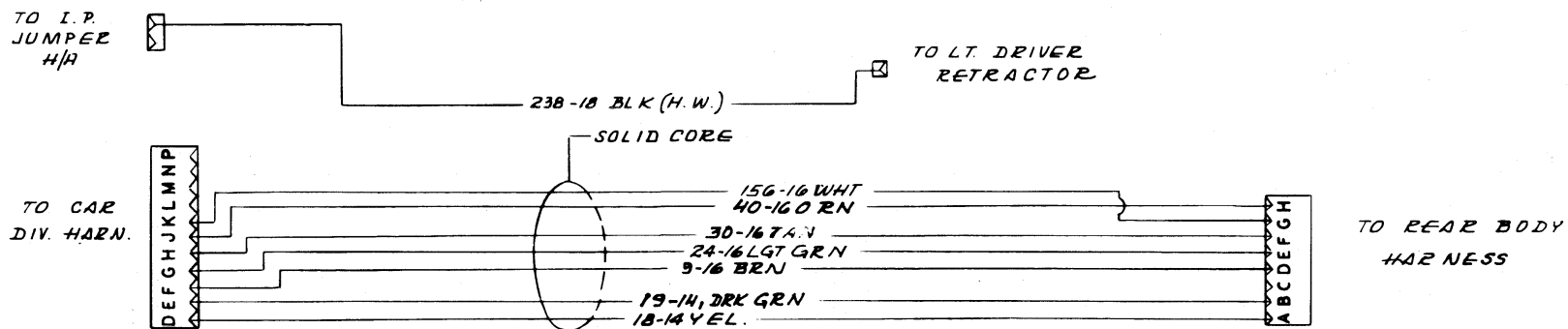
8643

Fig. 10-109-Rear Body Harness Circuit Diagram - Pontiac "B-39,57,59 and 69" Styles

Fig. 10-110-Front Body Harness Circuit Diagram - Pontiac "B-35 and 45" Styles

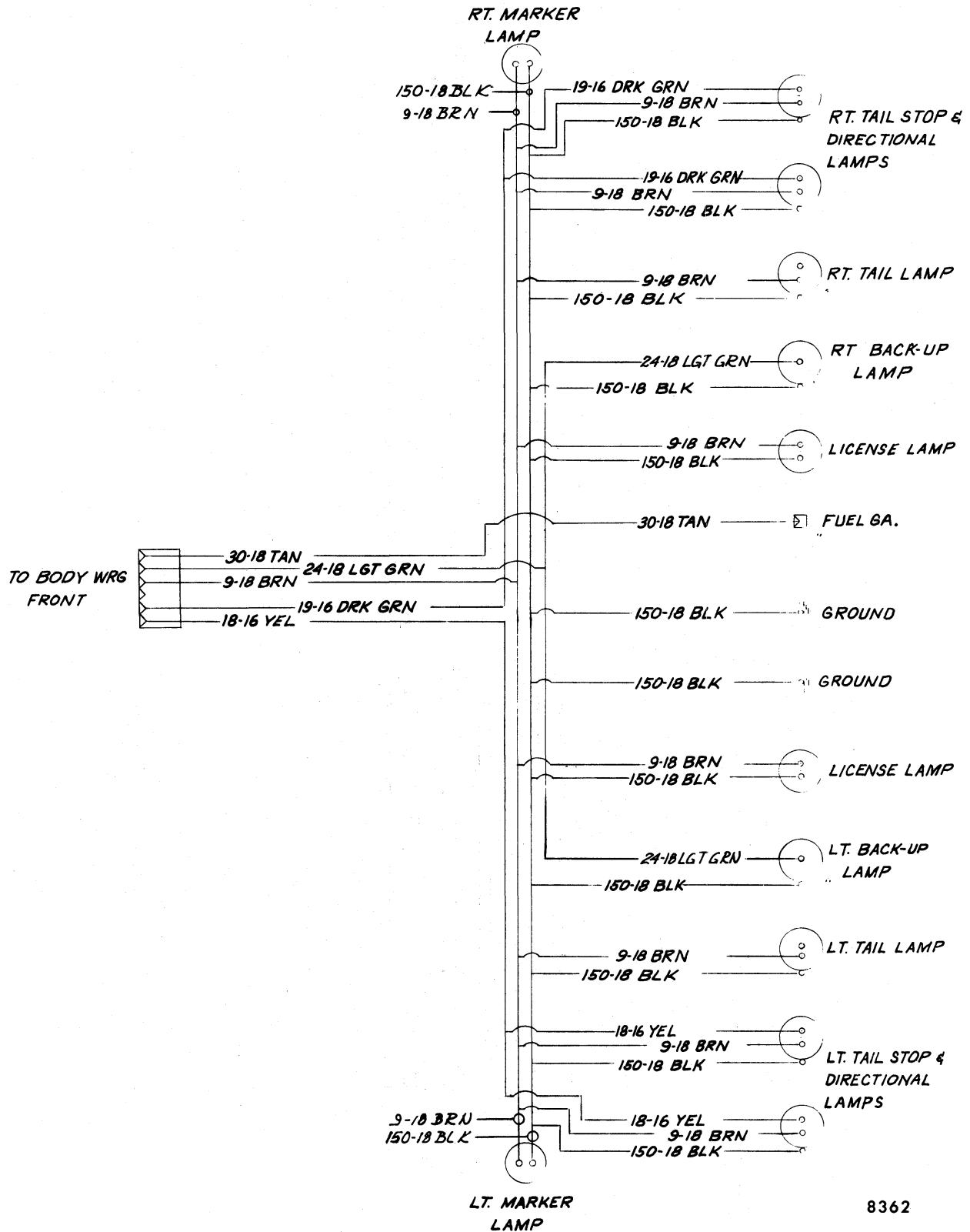






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Fig. 10-112-Front Body Harness Circuit Diagram - Pontiac "F" Styles



8362

Fig. 10-113-Rear Body Harness Circuit Diagram - Pontiac "F" Styles

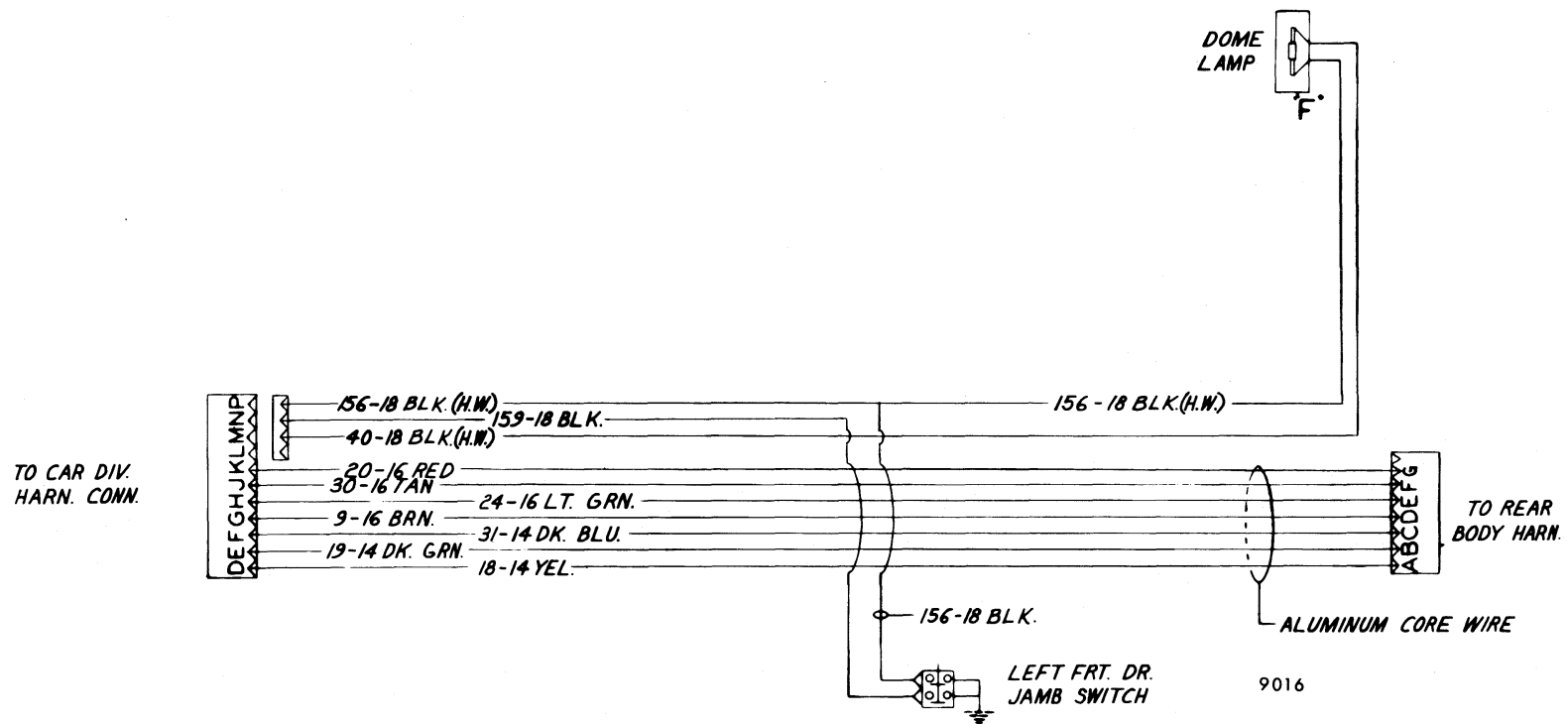


Fig. 10-114-Front Body Harness Circuit Diagram - Oldsmobile "H-07" Style

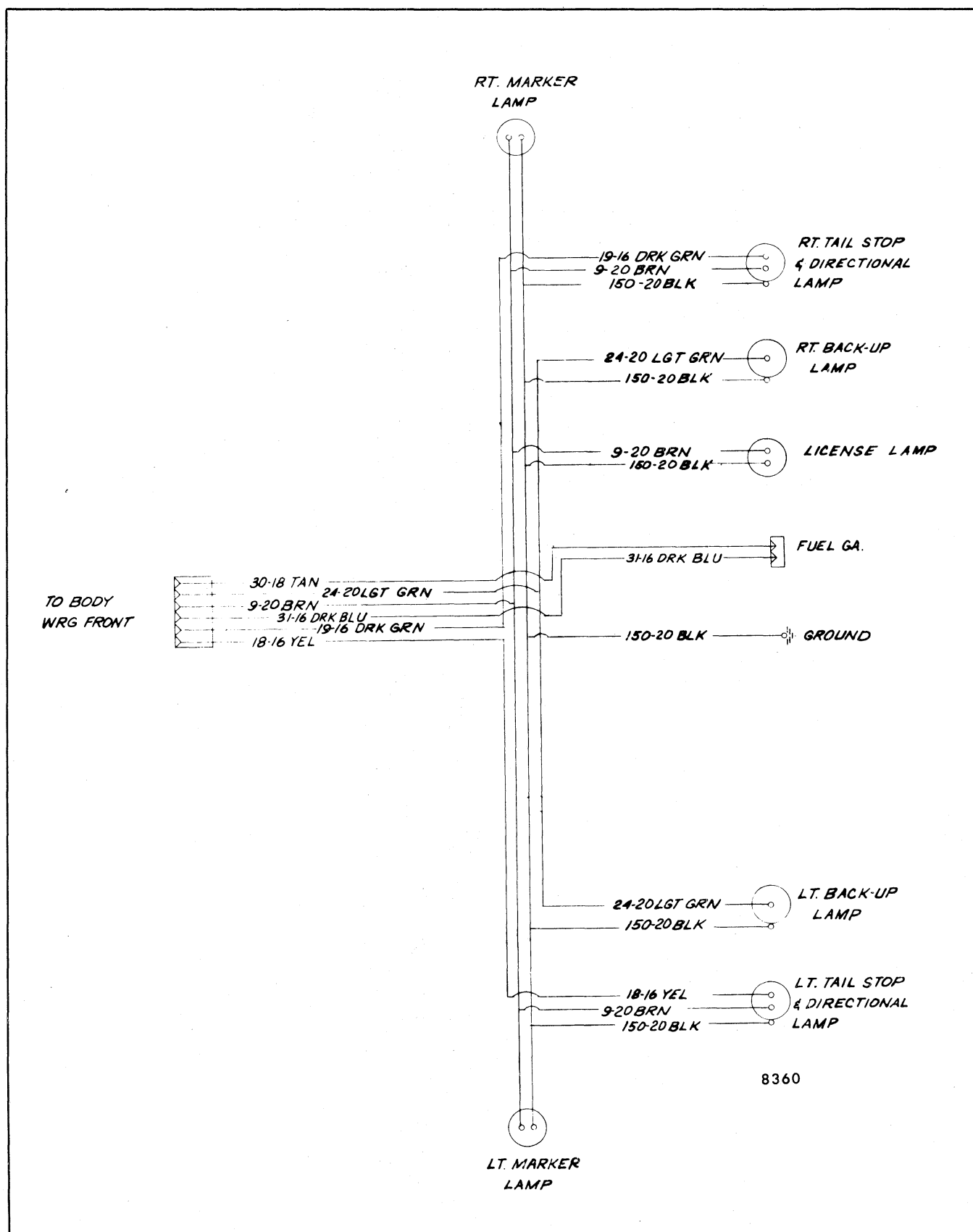
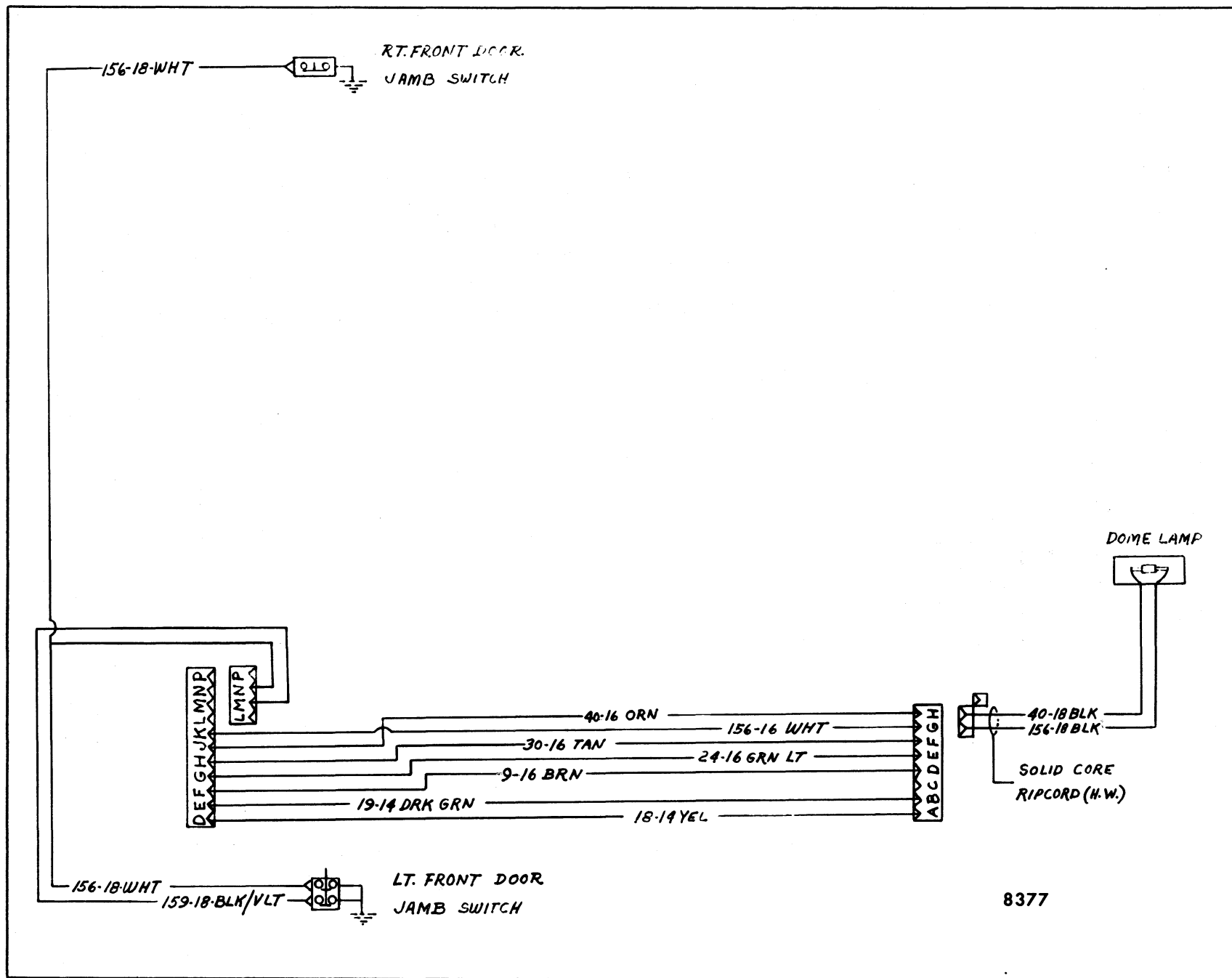
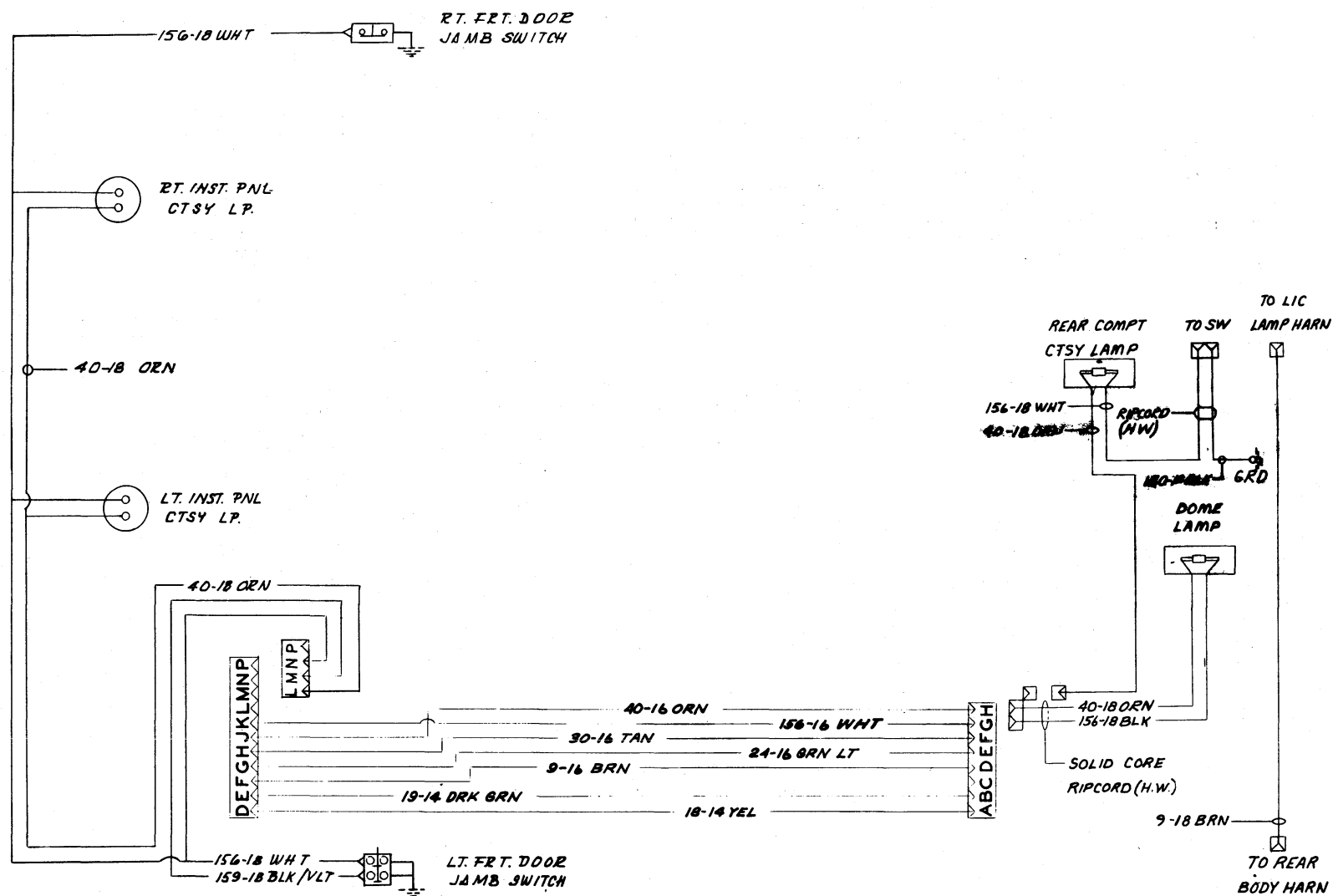


Fig. 10-115-Rear Body Harness Circuit Diagram - Oldsmobile "H-07" Style

Fig. 10-116-Front Body Harness Circuit Diagram - Oldsmobile "X" Styles, Less "X-17" Style





8375

Fig. 10-117-Front Body Harness Circuit Diagram - Oldsmobile "X-17" Style

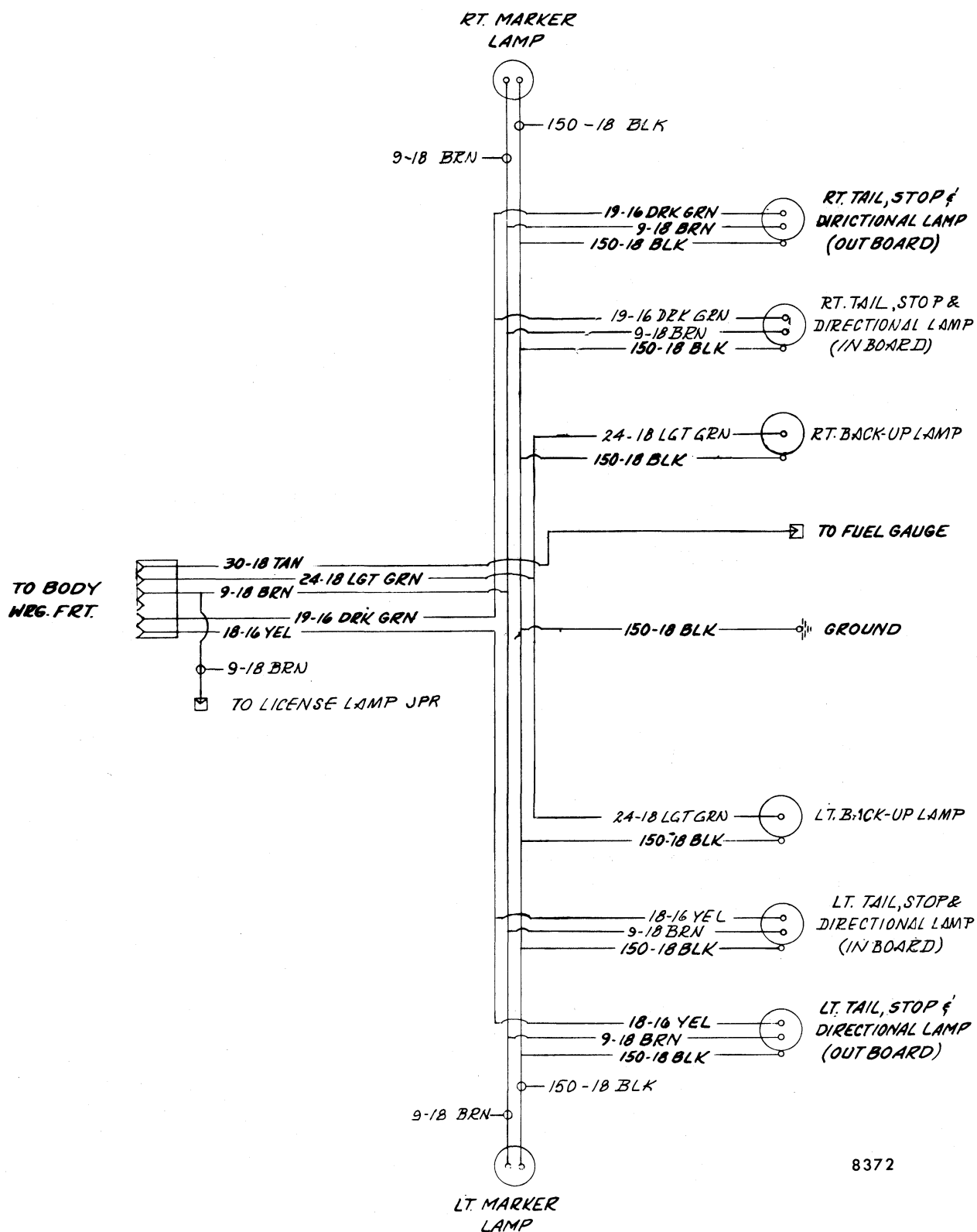
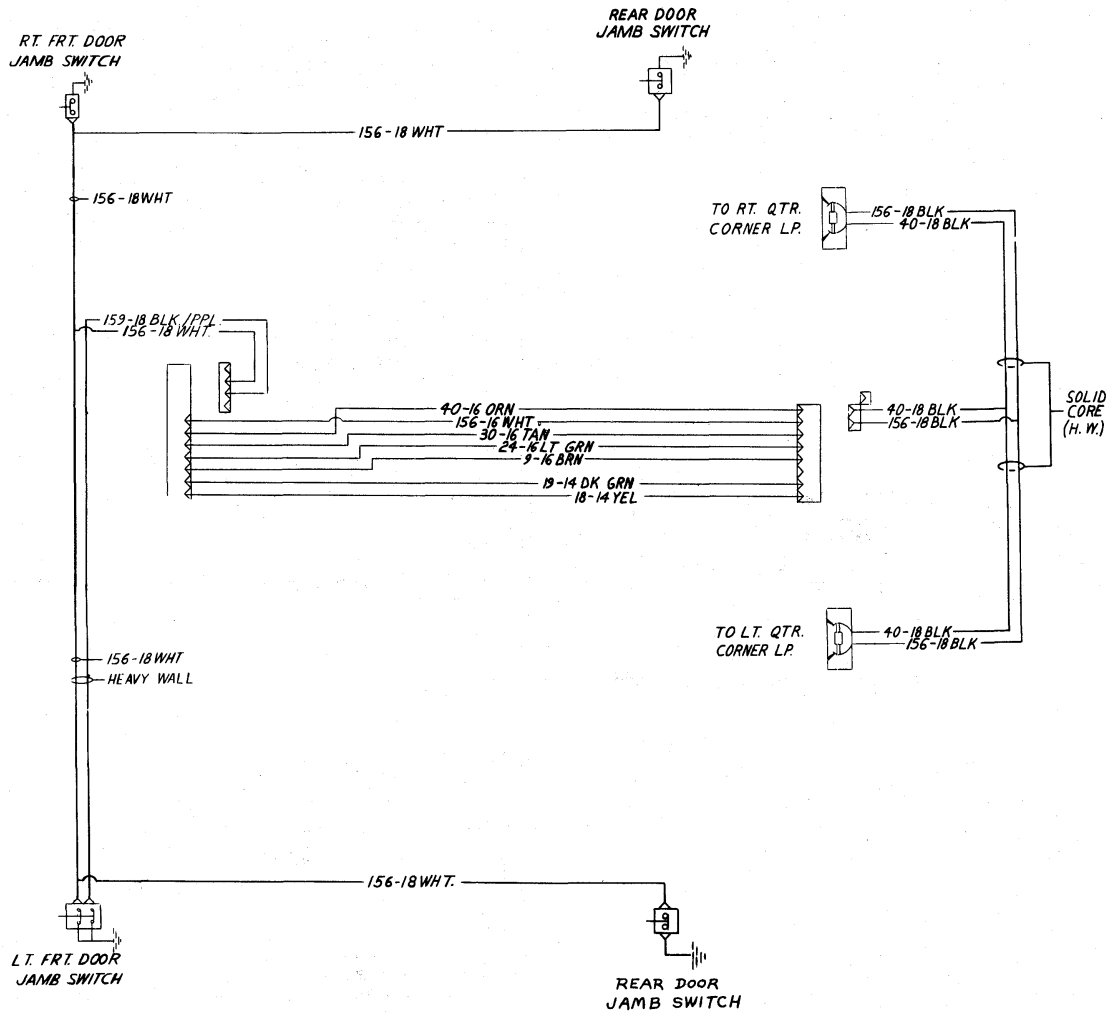
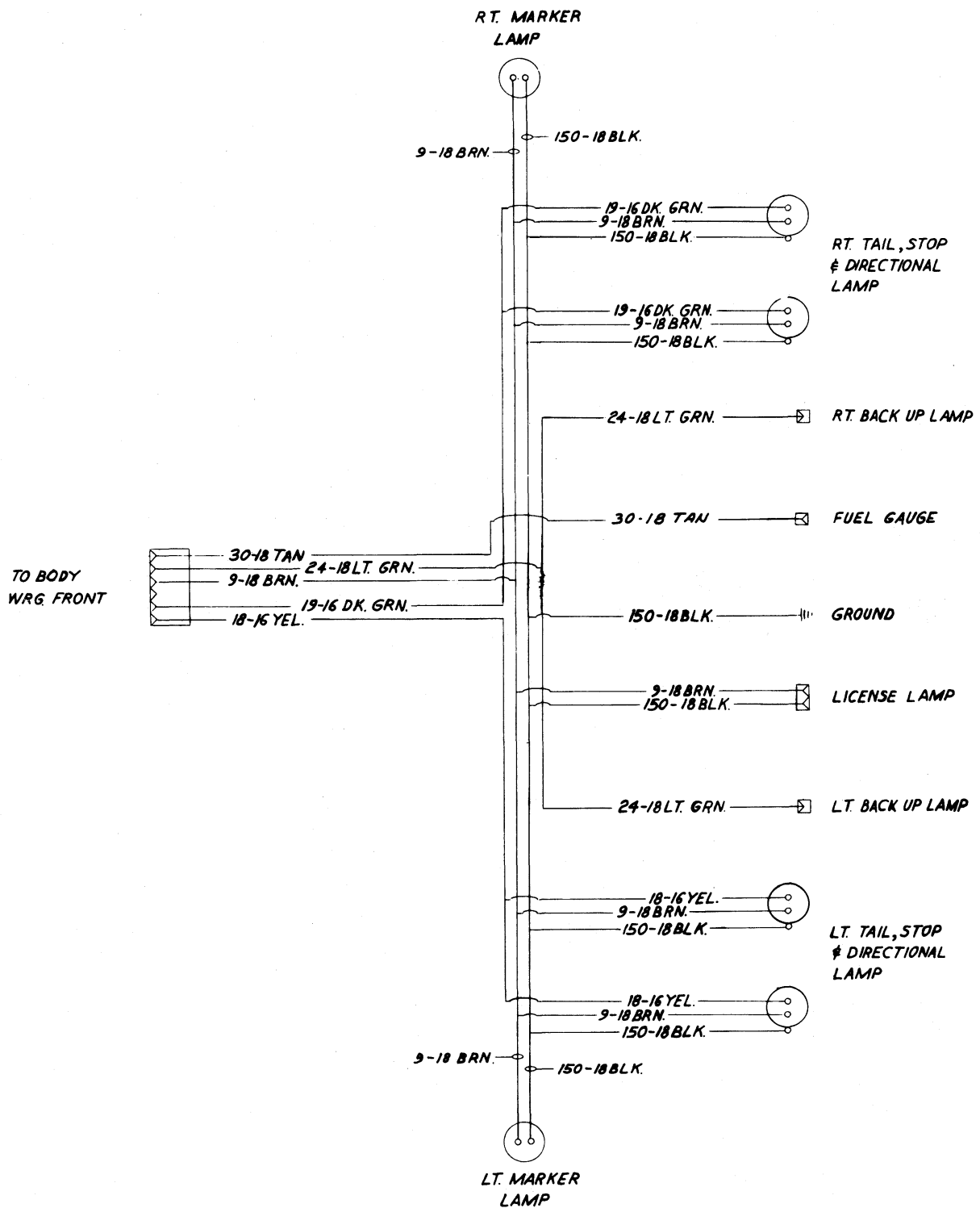


Fig. 10-118-Rear Body Harness Circuit Diagram - Oldsmobile "X" Styles



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Fig. 10-119-Front Body Harness Circuit Diagram - Oldsmobile "A" Styles



9013

Fig. 10-120-Rear Body Harness Circuit Diagram - Oldsmobile "A-29" Style

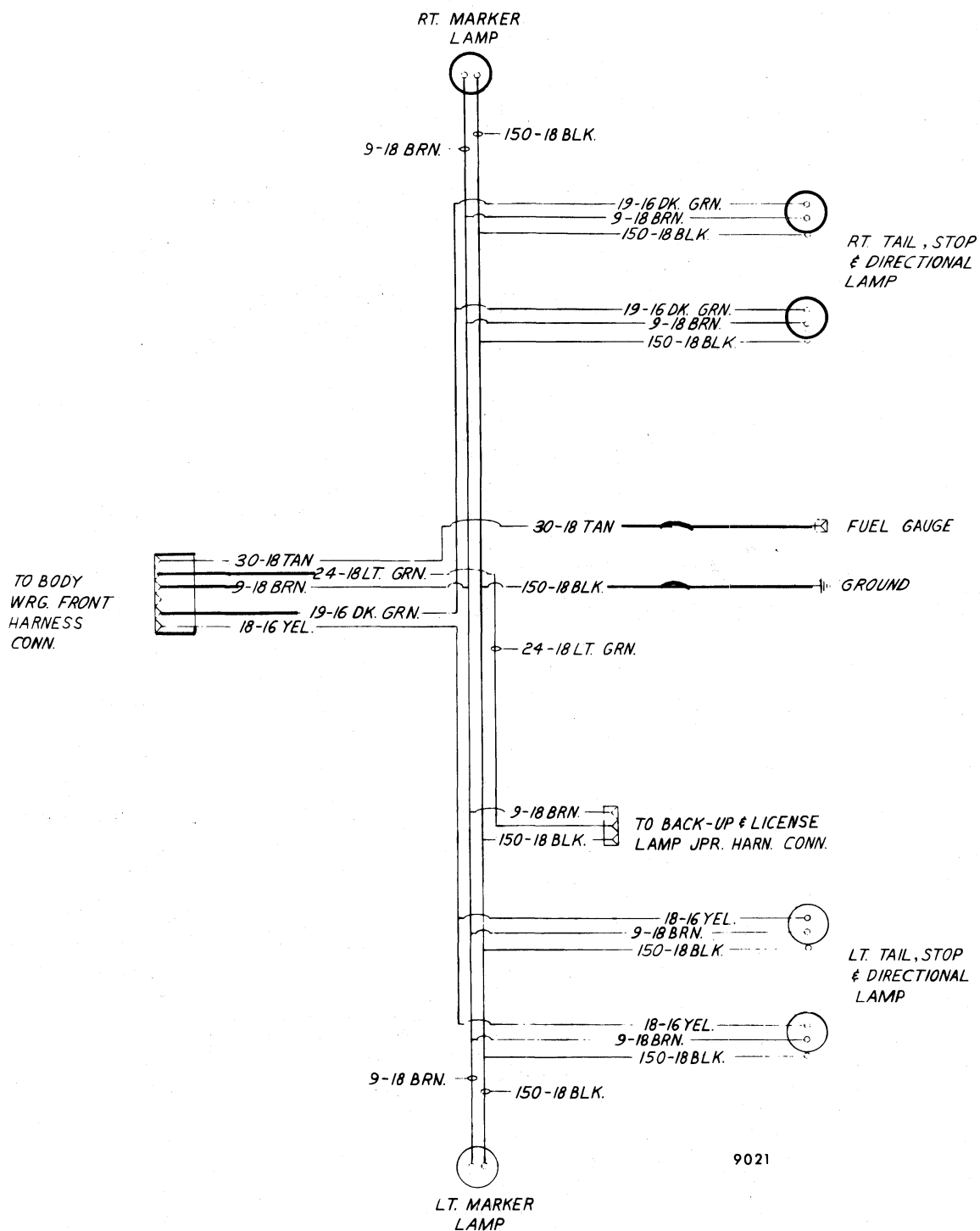
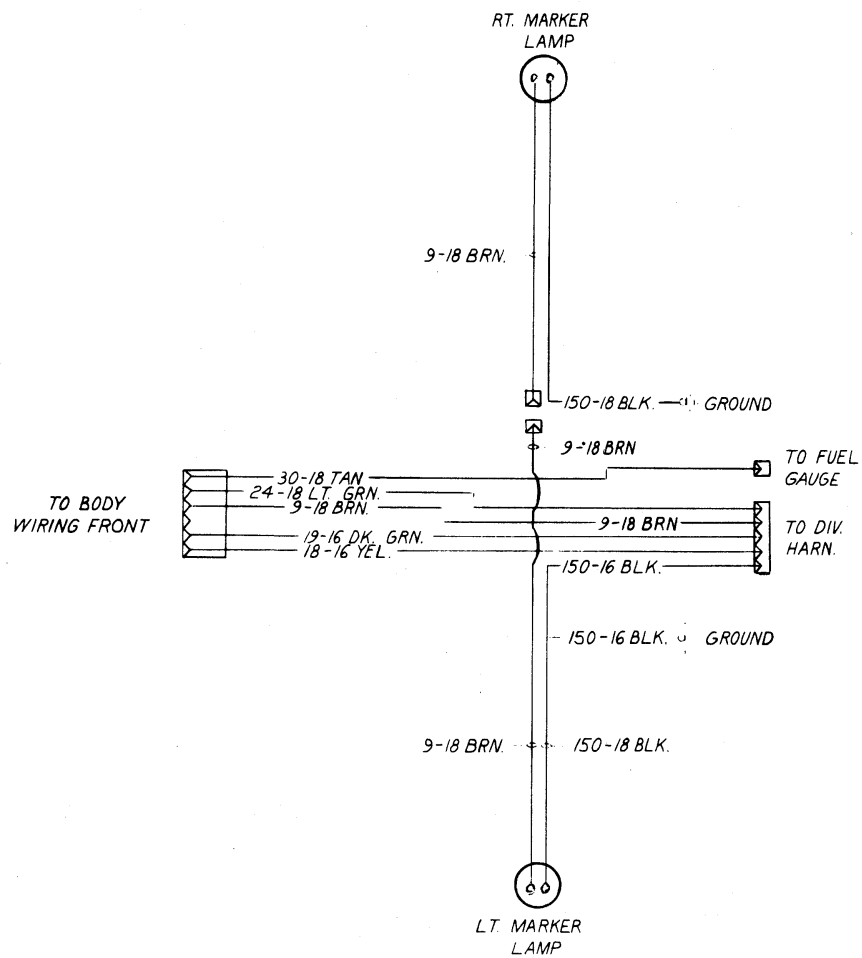
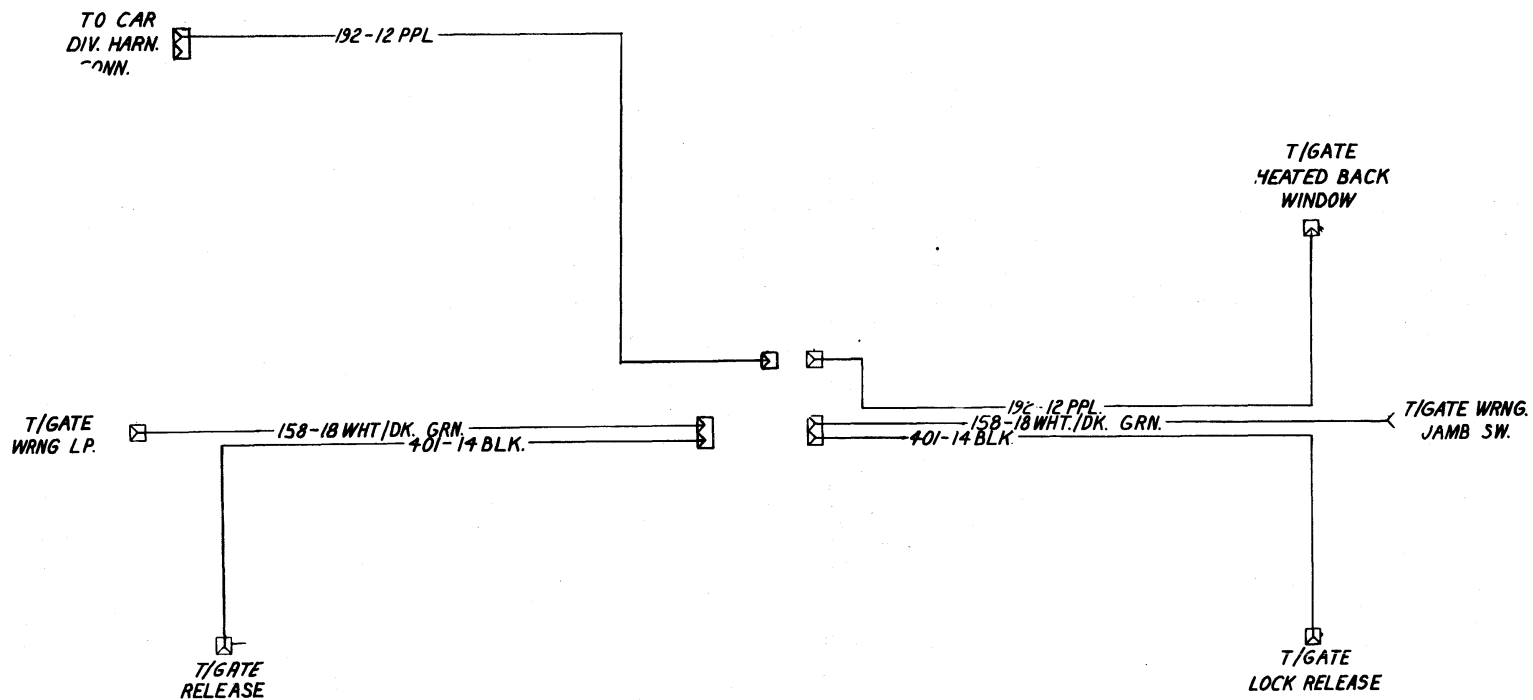


Fig. 10-121 - Rear Body Harness Circuit Diagram - Oldsmobile "A-37-57" Styles



8106

Fig. 10-122-Rear Body Harness Circuit Diagram - Oldsmobile "A-35" Style



8110

Fig. 10-123-Tailgate Harness Circuit Diagram - Oldsmobile "A-35" Style

RT. FRT. DOOR
CTSY. & WARN. LAMP

QTR. A/REST
CIGAR LIGHTER

RIGHT
FRONT DOOR
JAMB SW

150-16 BLK.

40-16 ORN.

156-18 WHT

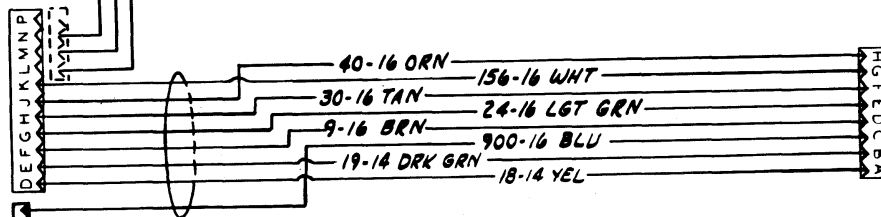
40-16 ORN-5
156-18 WHT-2

40-16 ORN
159-18 BLK. PPL
156-18 WHT

DM & RDG LP

156-18 WHT (H.W.)

40-18 ORN (H.W.)



SEAMLESS CONDUIT WITH ALUMINUM SOLID
CORE WIRE & NYLON INSULATION

40-16 ORN-5
156-18 WHT-2

40-16 ORN
156-18 WHT

40-16 ORN

150-16 BLK

QTR. A/REST
CIGAR LIGHTER

8637

LEFT
FRONT DOOR
JAMB SW

LT. FRT. DOOR
CTSY. & WARN. LAMP

Fig. 10-124-Front Body Circuit Diagram - Oldsmobile "E-57" Style

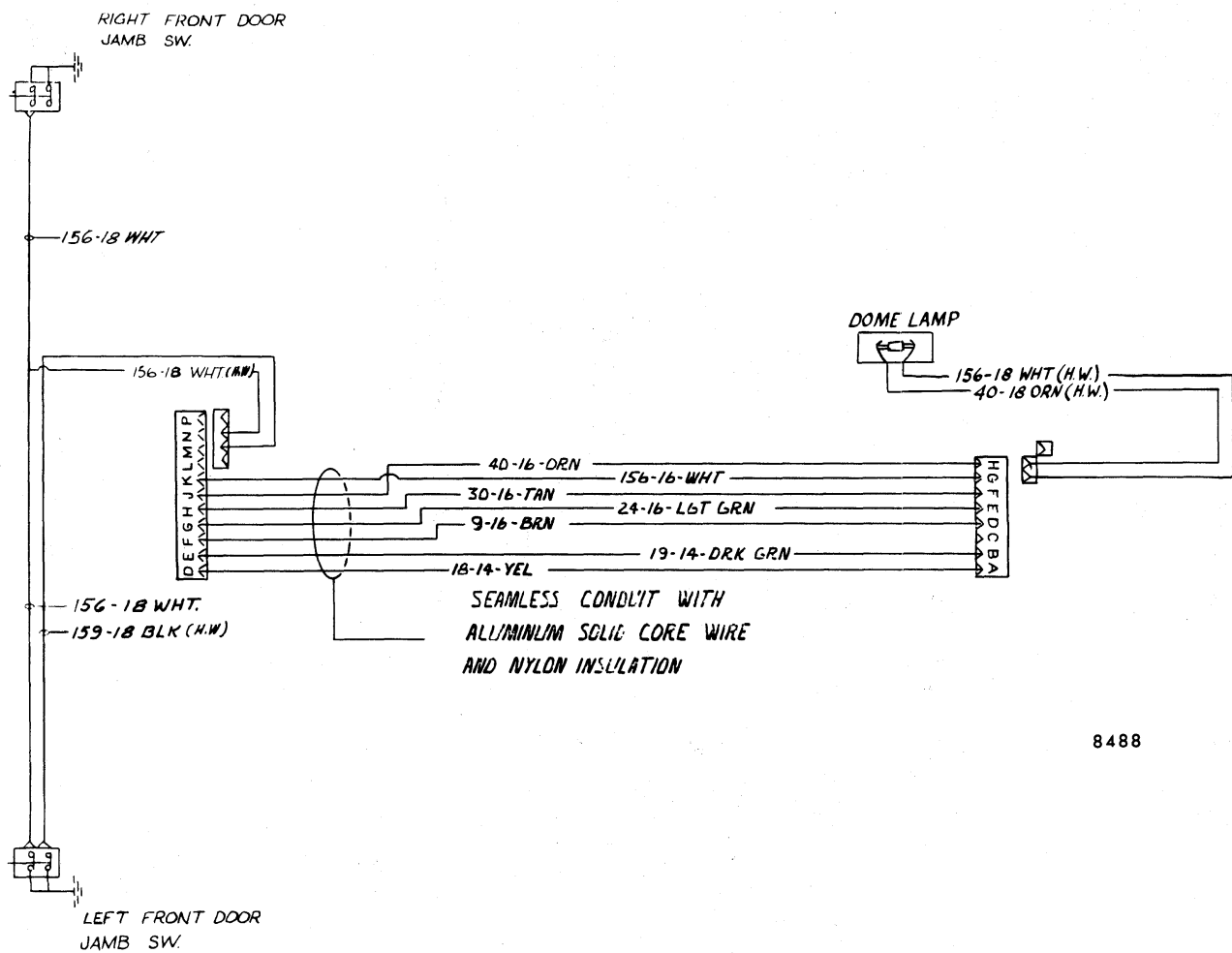
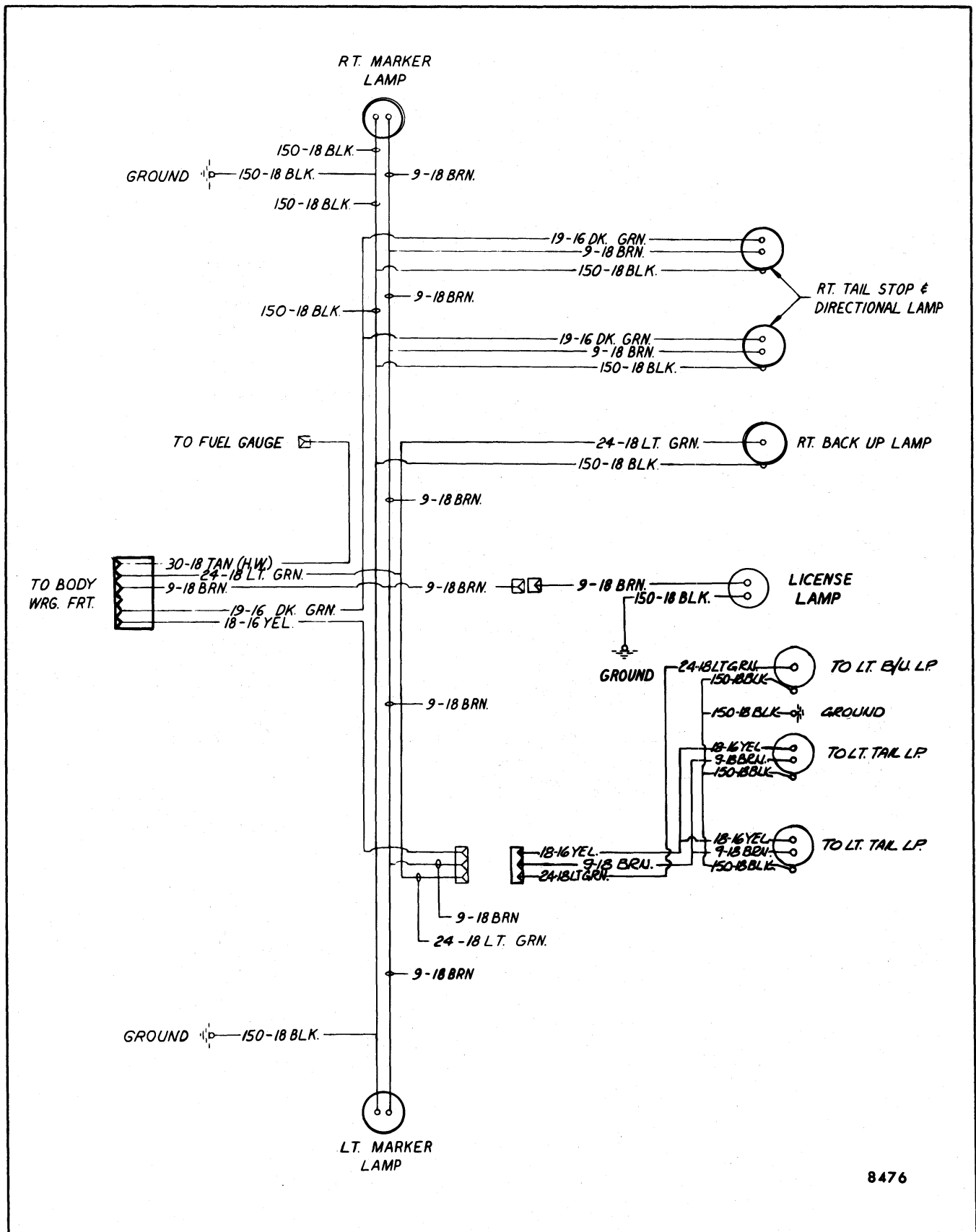


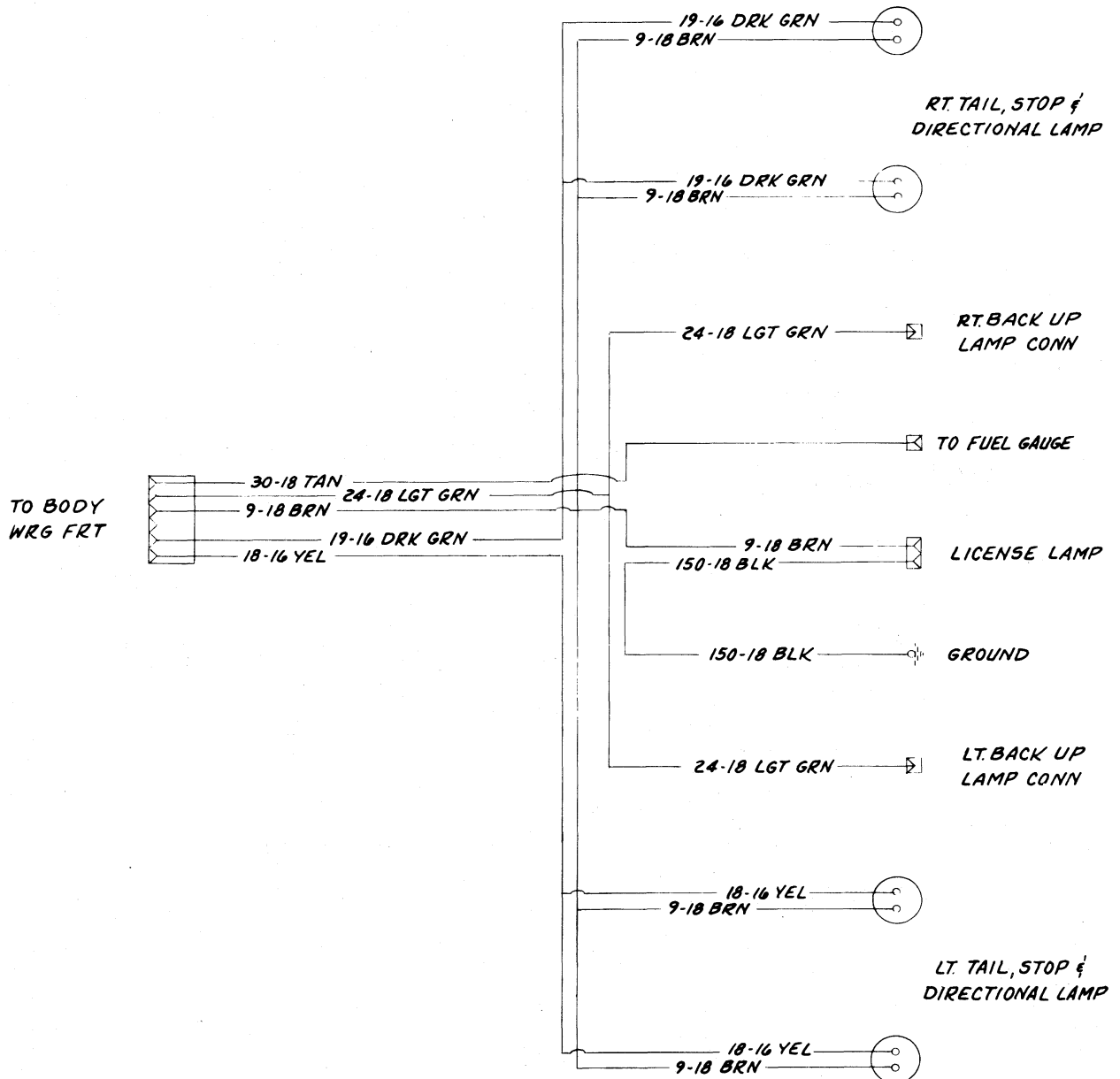
Fig. 10-125-Front Body Harness Circuit Diagram - Oldsmobile "B-39 and 69" Styles

Fig. 10-126-Front Body Harness Circuit Diagram - Oldsmobile "B-35 and 45" Styles



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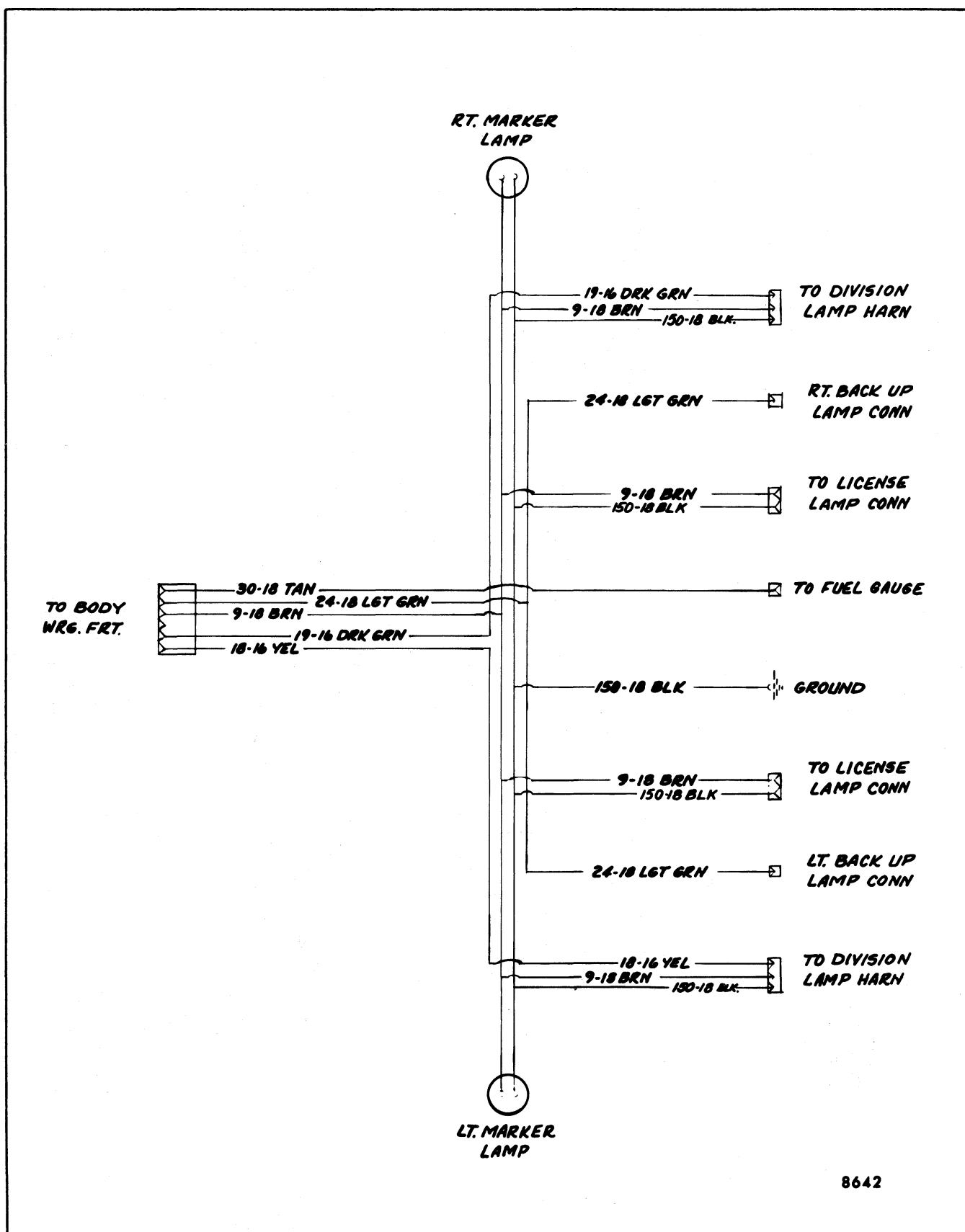
Fig. 10-127-Rear Body Harness Circuit Diagram - Oldsmobile "B-35 and 45" Styles



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Fig. 10-128-Rear Body Harness Circuit Diagram - Oldsmobile "B" Styles

Fig. 10-129-Front Body Harness Circuit Diagram - Oldsmobile "C-39" Style



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Fig. 10-130-Rear Body Harness Circuit Diagram - Oldsmobile "C" Styles

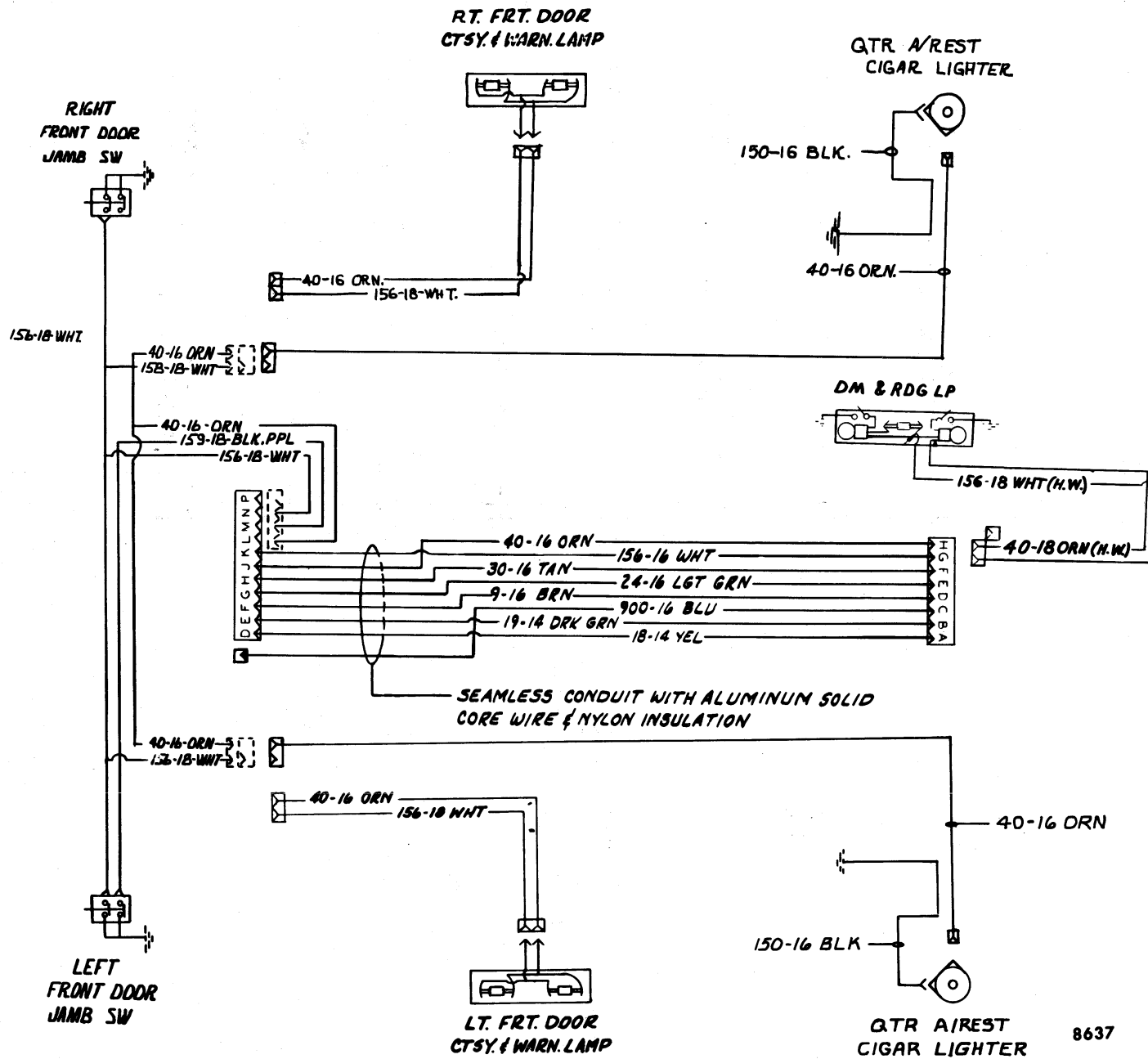


Fig. 10-131-Front Body Harness Circuit Diagram - Oldsmobile "E" Styles

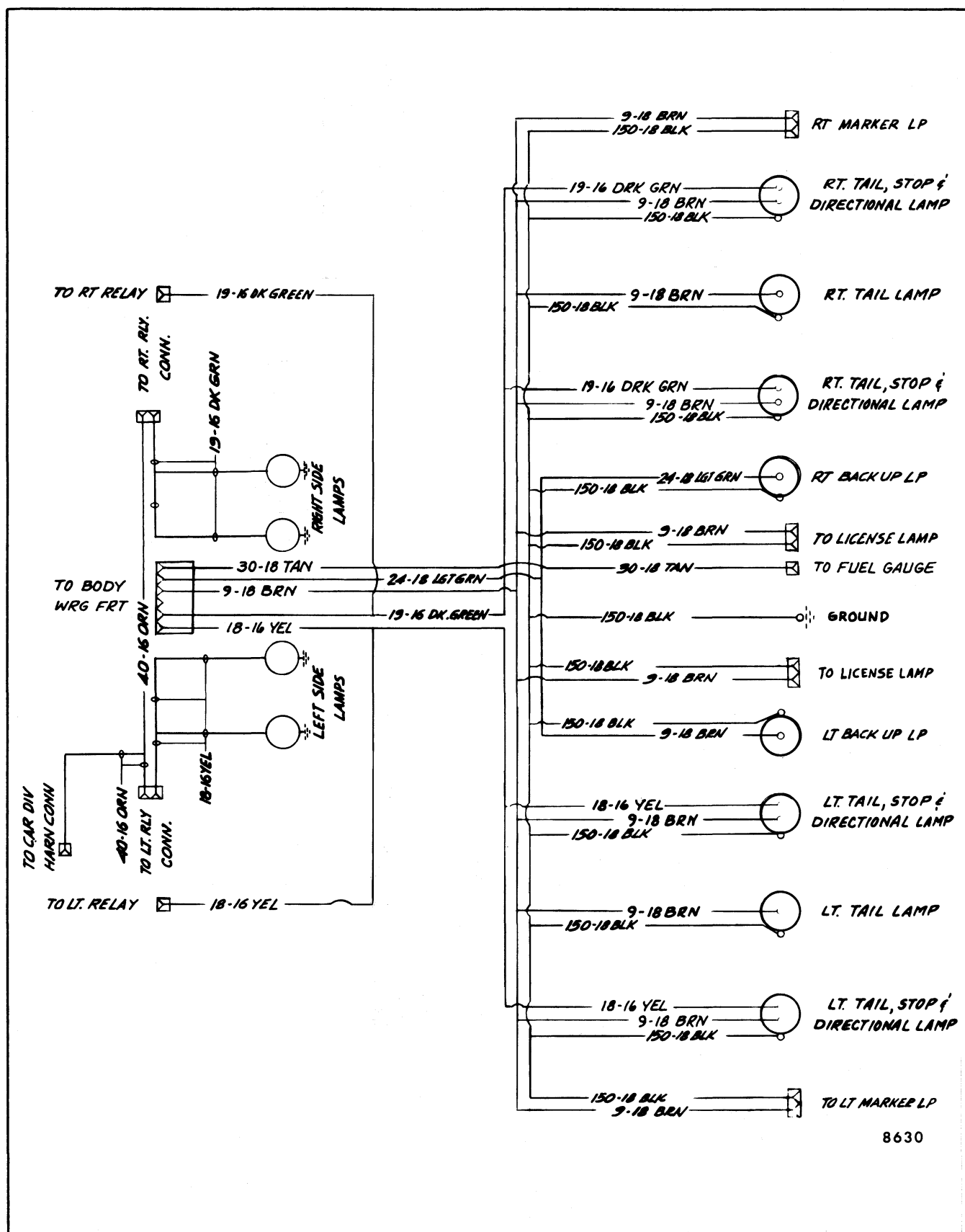


Fig. 10-132-Rear Body Harness Circuit Diagram - Oldsmobile "E" Styles

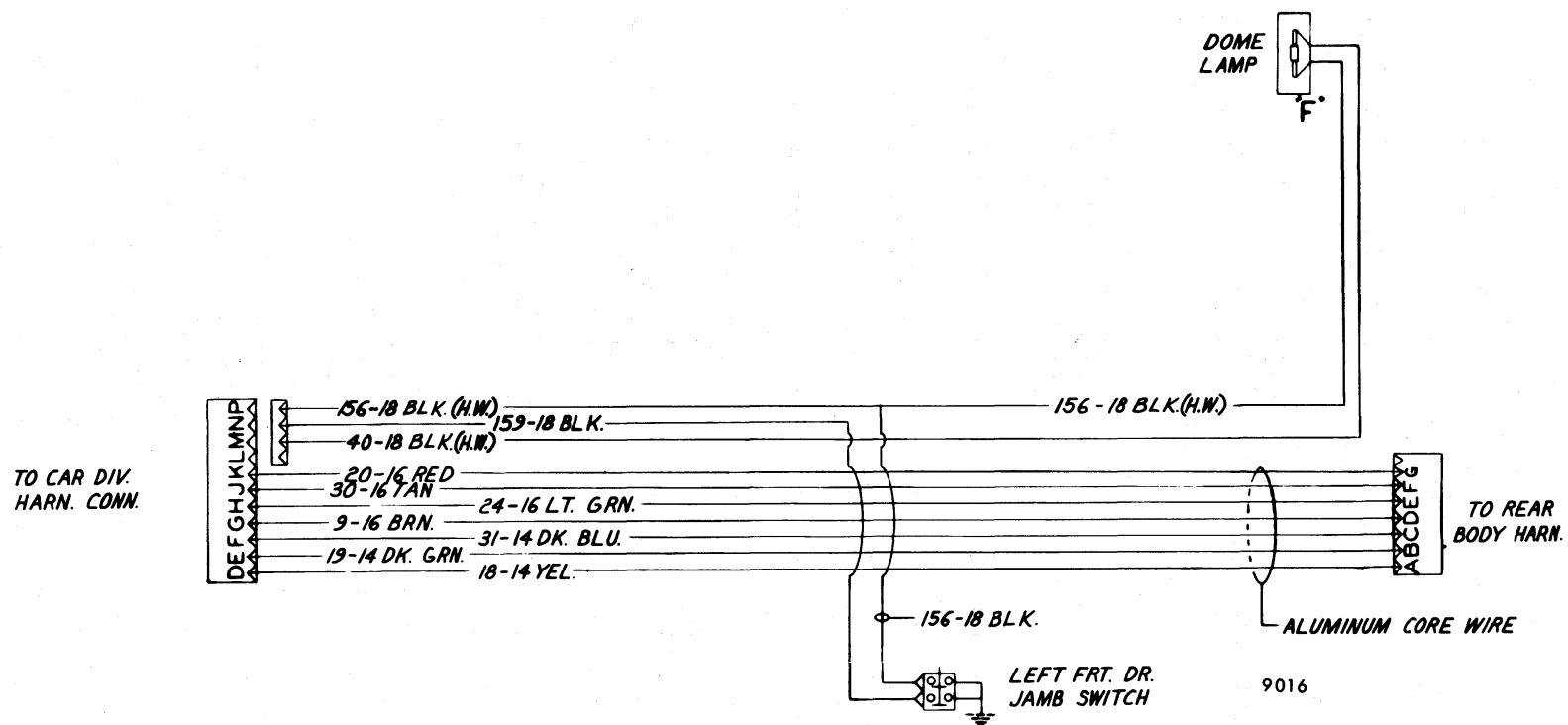


Fig. 10-133-Front Body Harness Circuit Diagram - Buick "H-07" Style

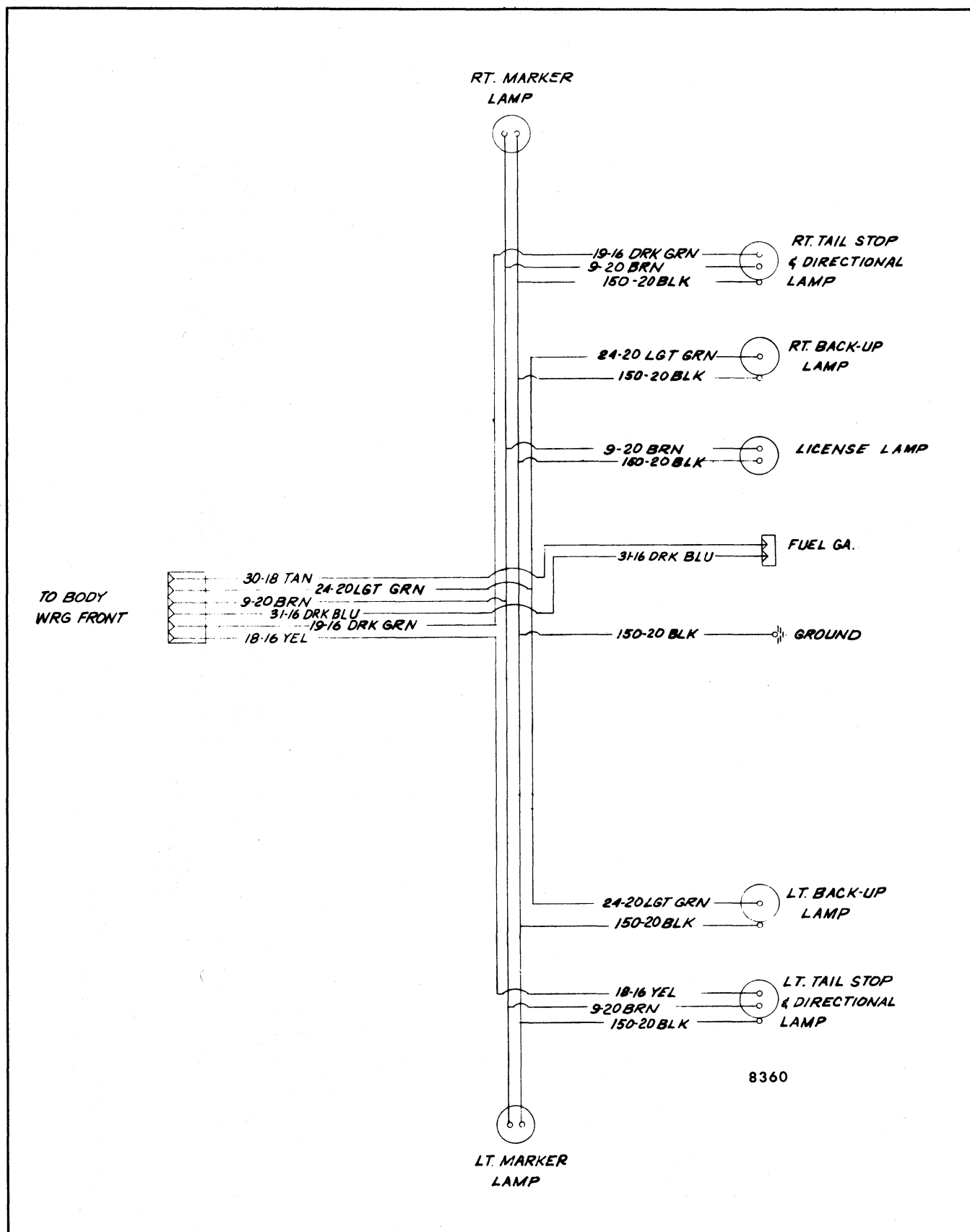


Fig. 10-134-Rear Body Harness Circuit Diagram - Buick "H-07" Style

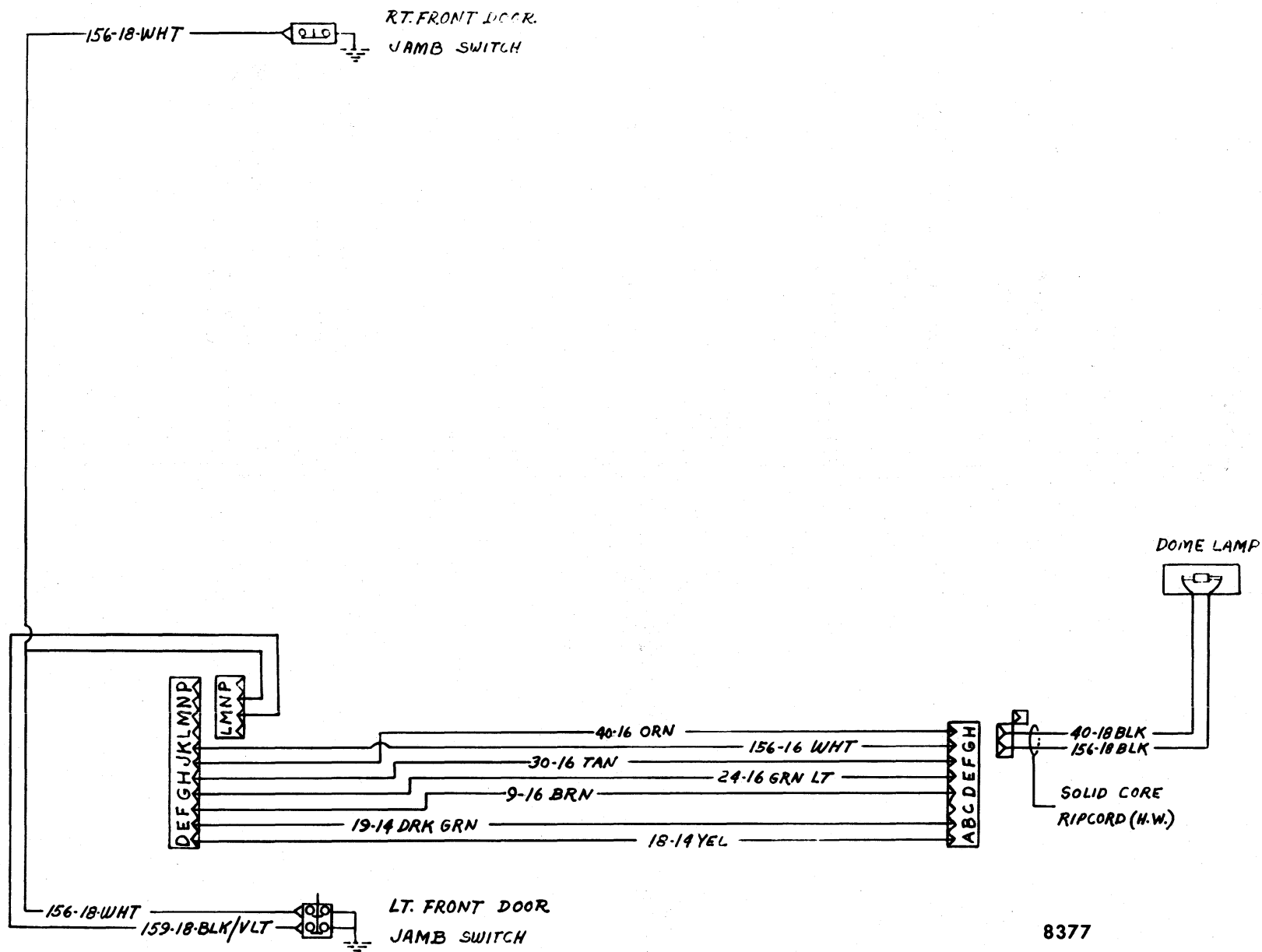
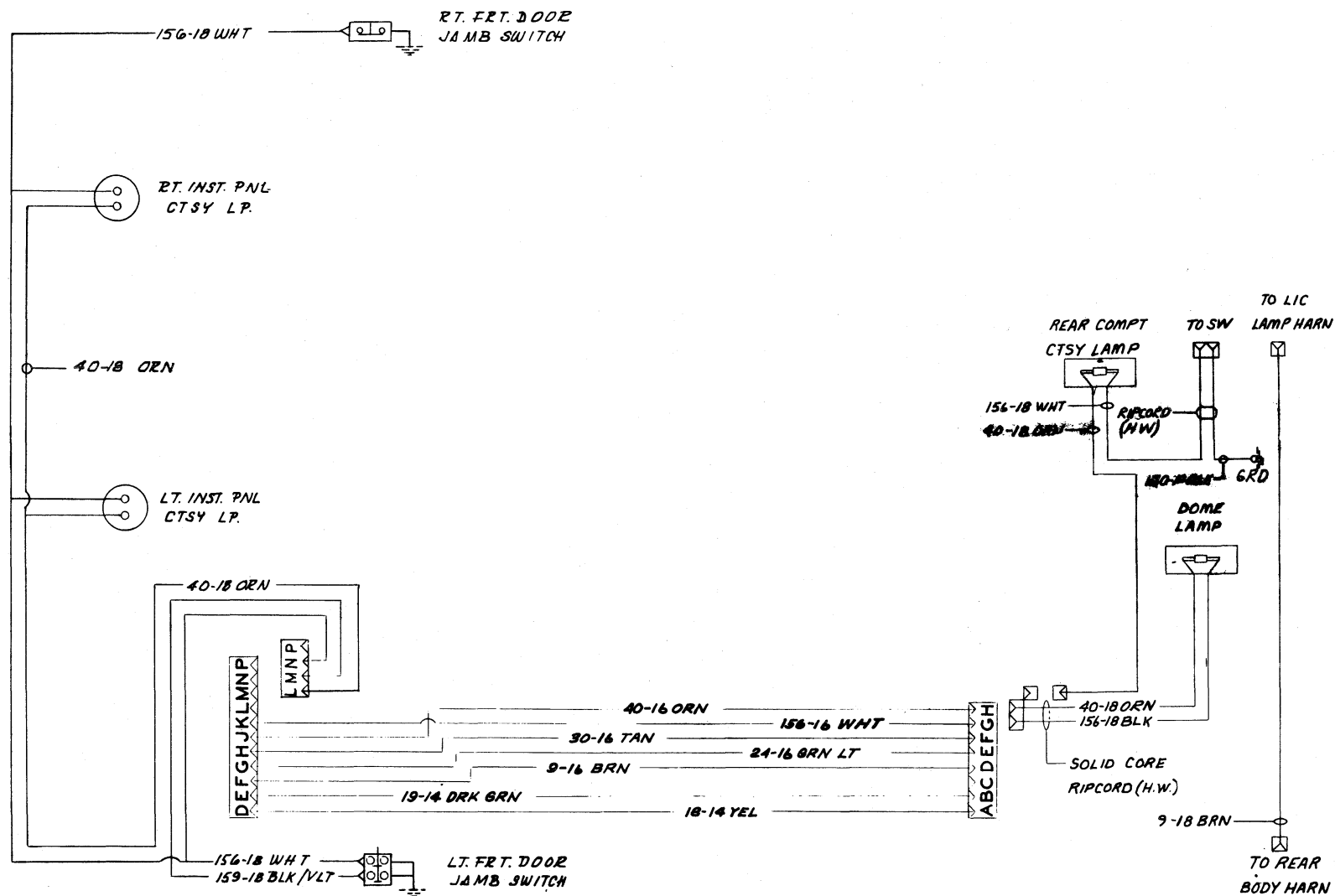
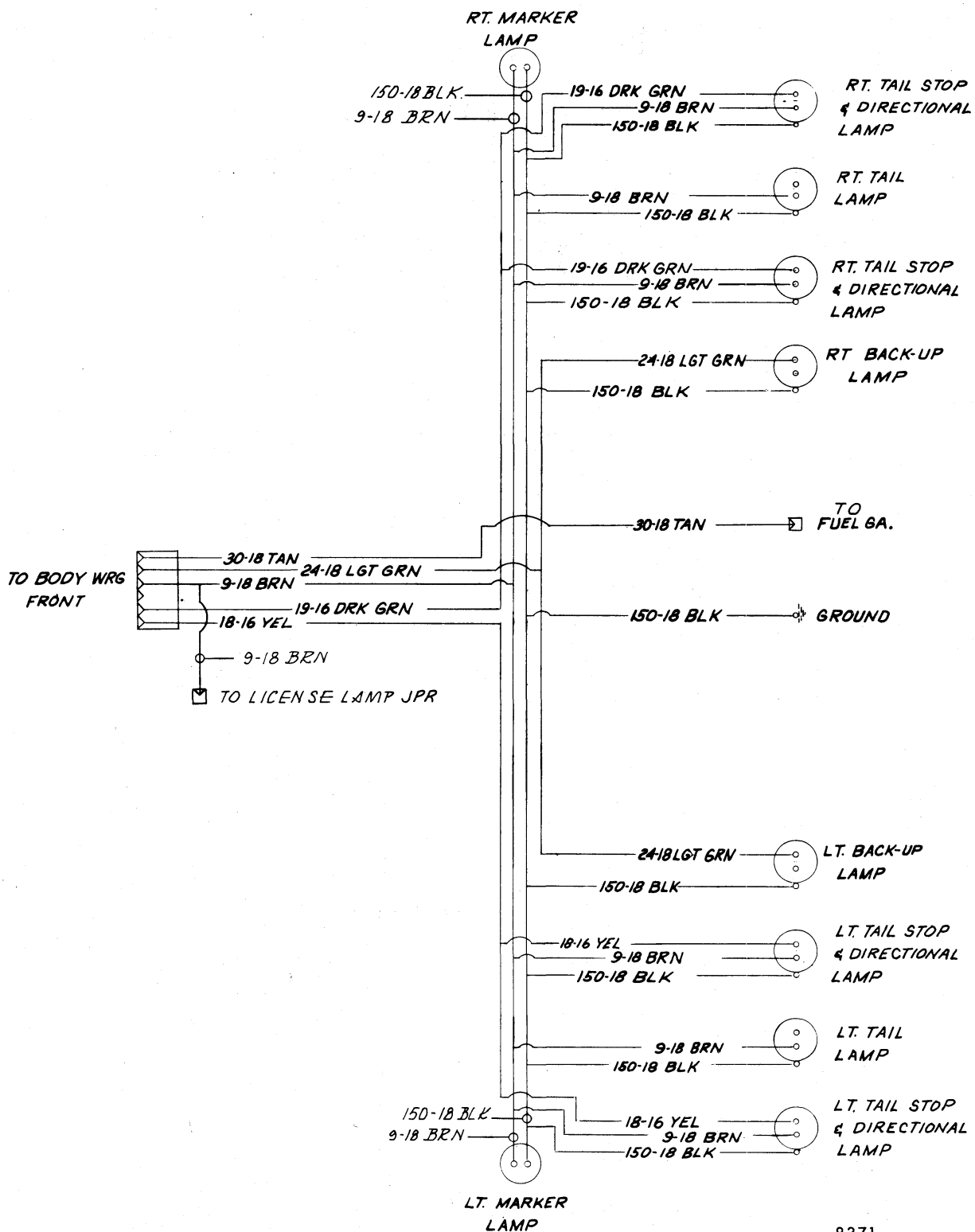


Fig. 10-135-Front Body Harness Circuit Diagram - Buick "X" Styles, Less "X-17" Style

Fig. 10-136-Front Body Harness Circuit Diagram - Buick "X-17" Style



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Fig. 10-137-Rear Body Harness Circuit Diagram - Buick "X" Styles

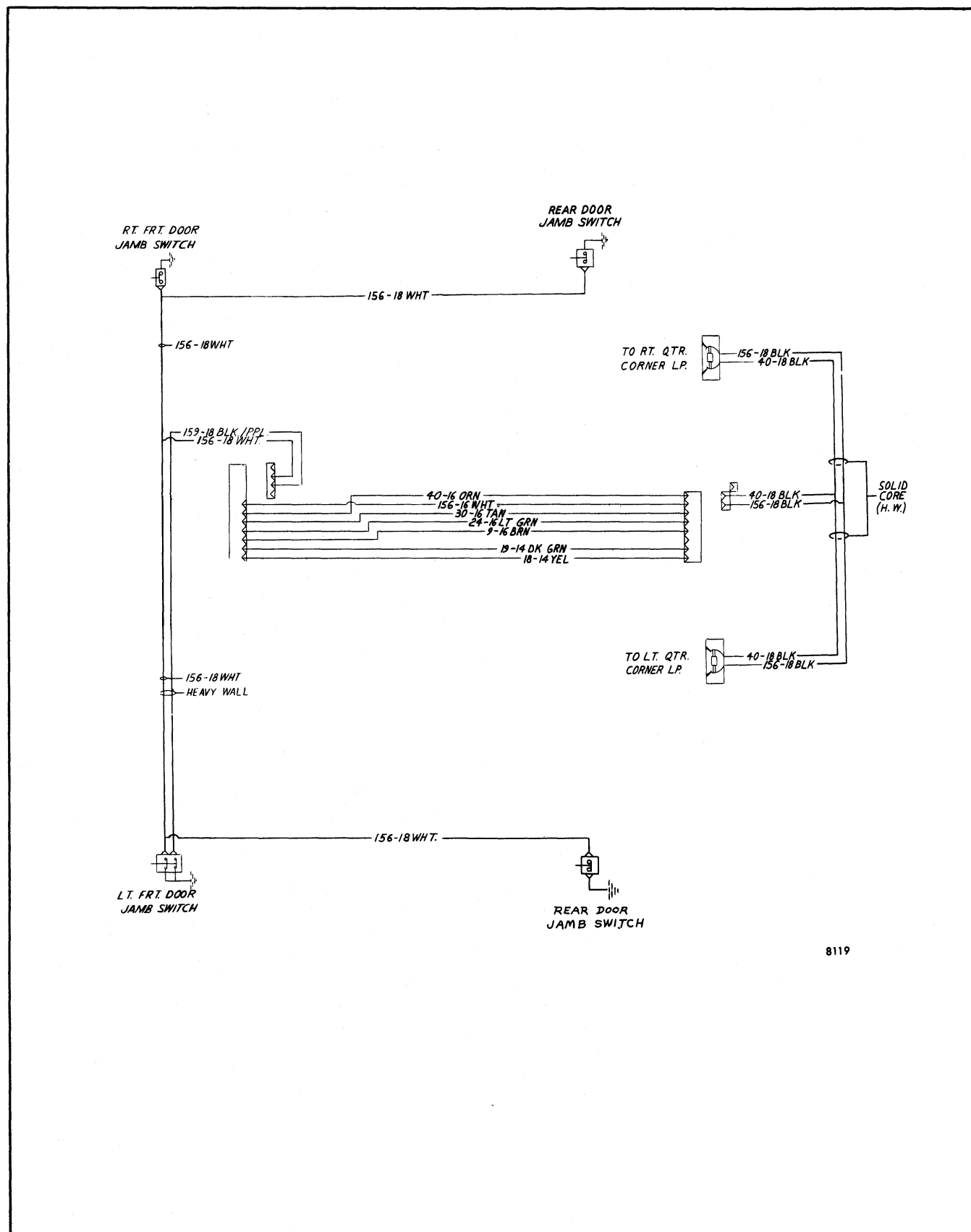
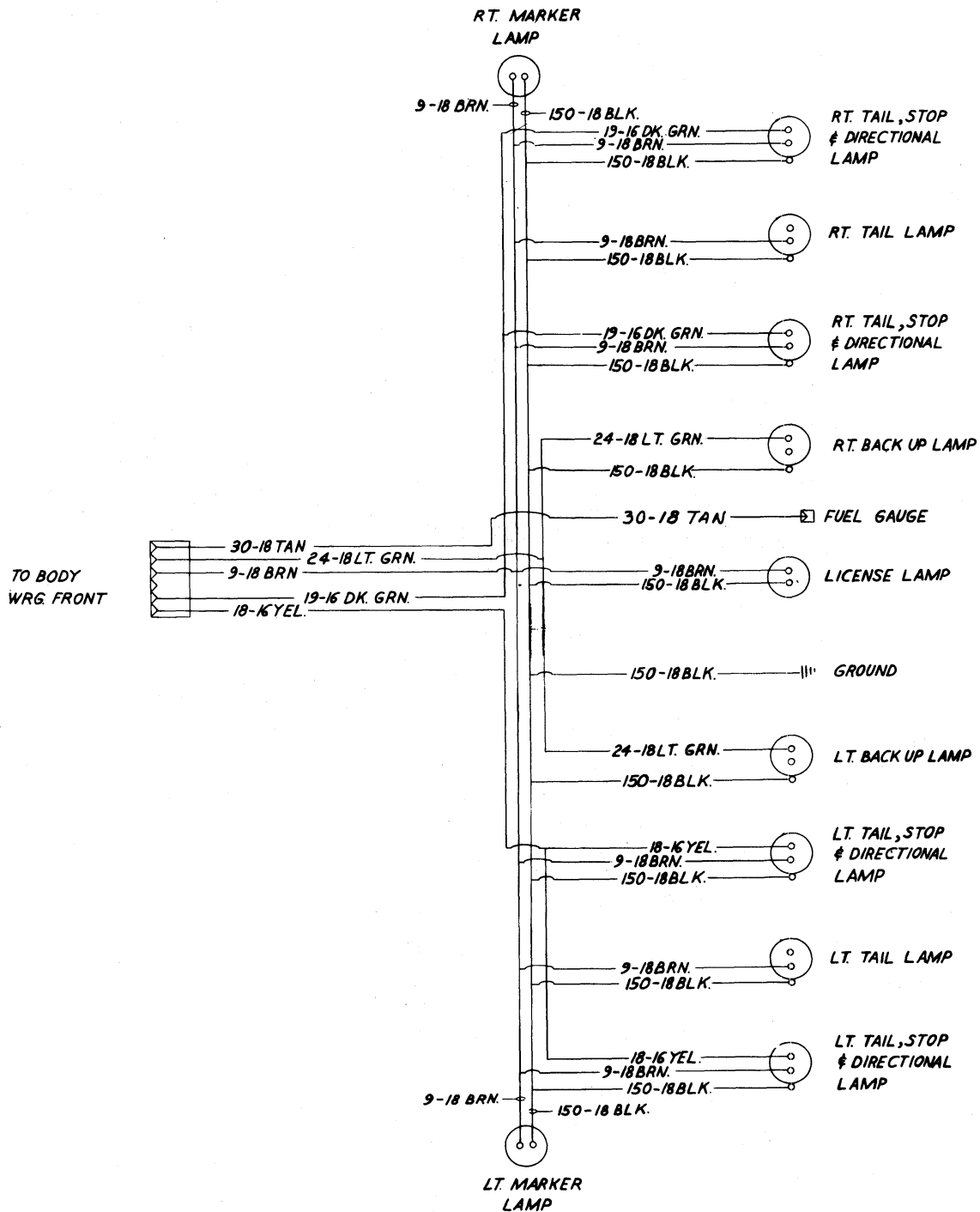


Fig. 10-138-Front Body Harness Circuit Diagram - Buick "A" Styles



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Fig. 10-139-Rear Body Harness Circuit Diagram - Buick "A-29" Style

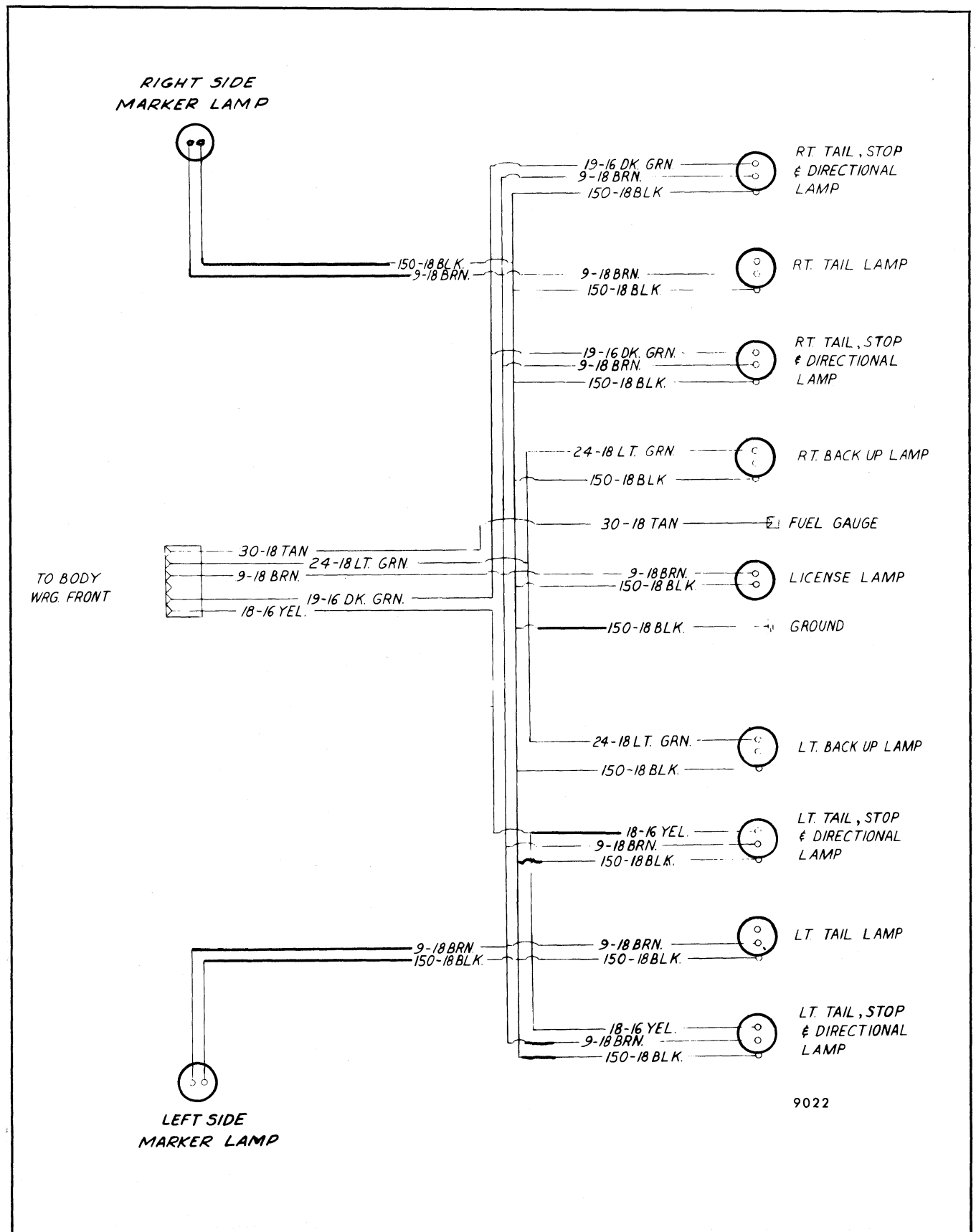
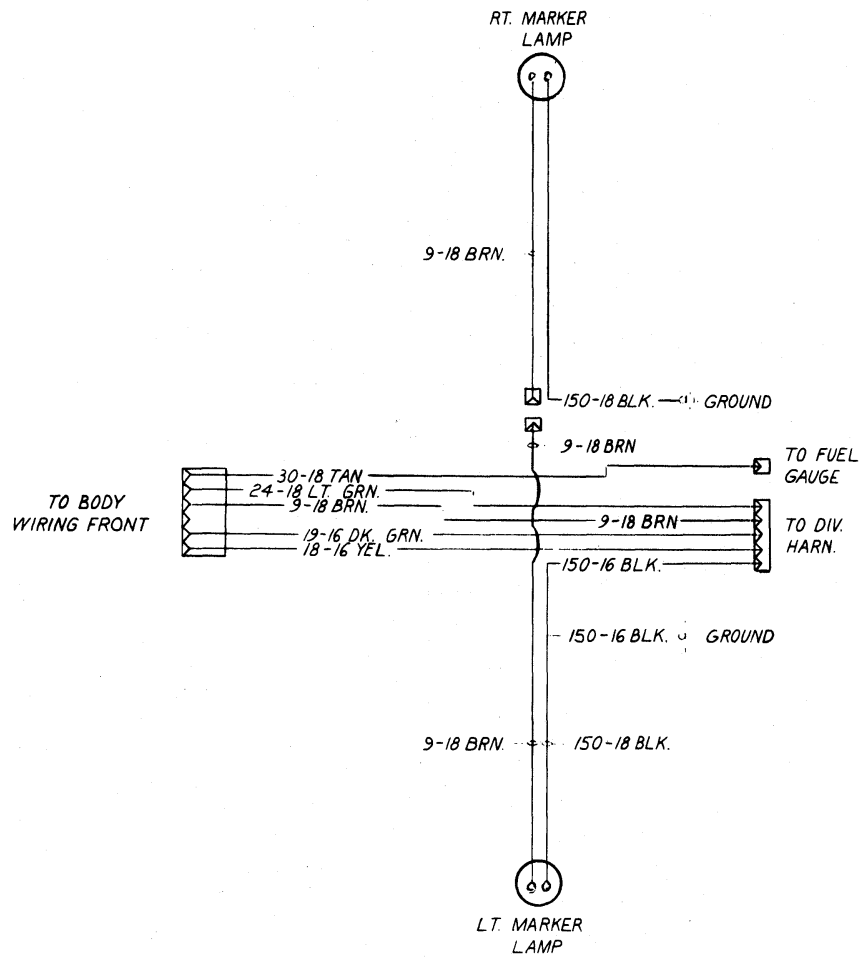
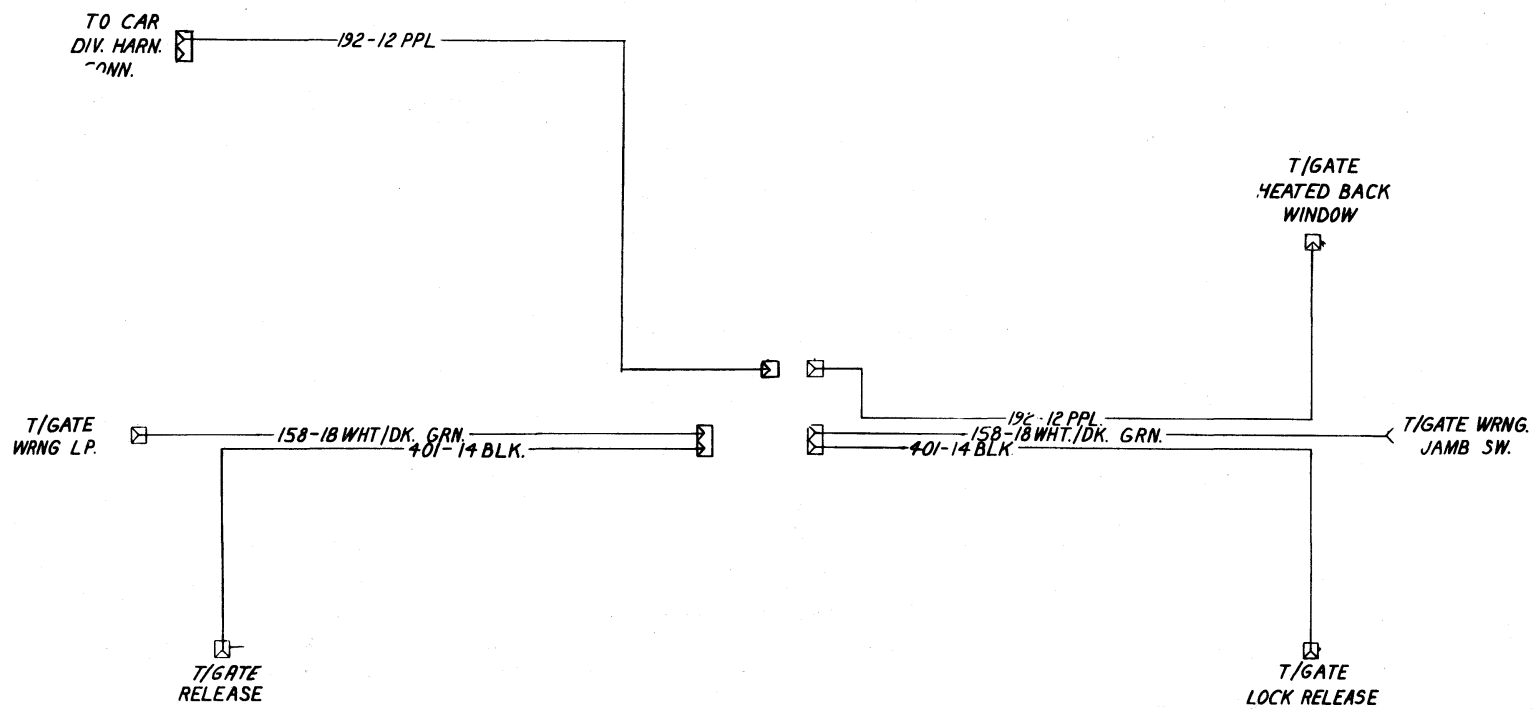


Fig. 10-140 - Rear Body Harness - Buick "A-37-57" Styles



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Fig. 10-141-Rear Body Harness Circuit Diagram - Buick "A-35" Style



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Fig. 10-142-Tailgate Harness Circuit Diagram - Buick "A-35" Style

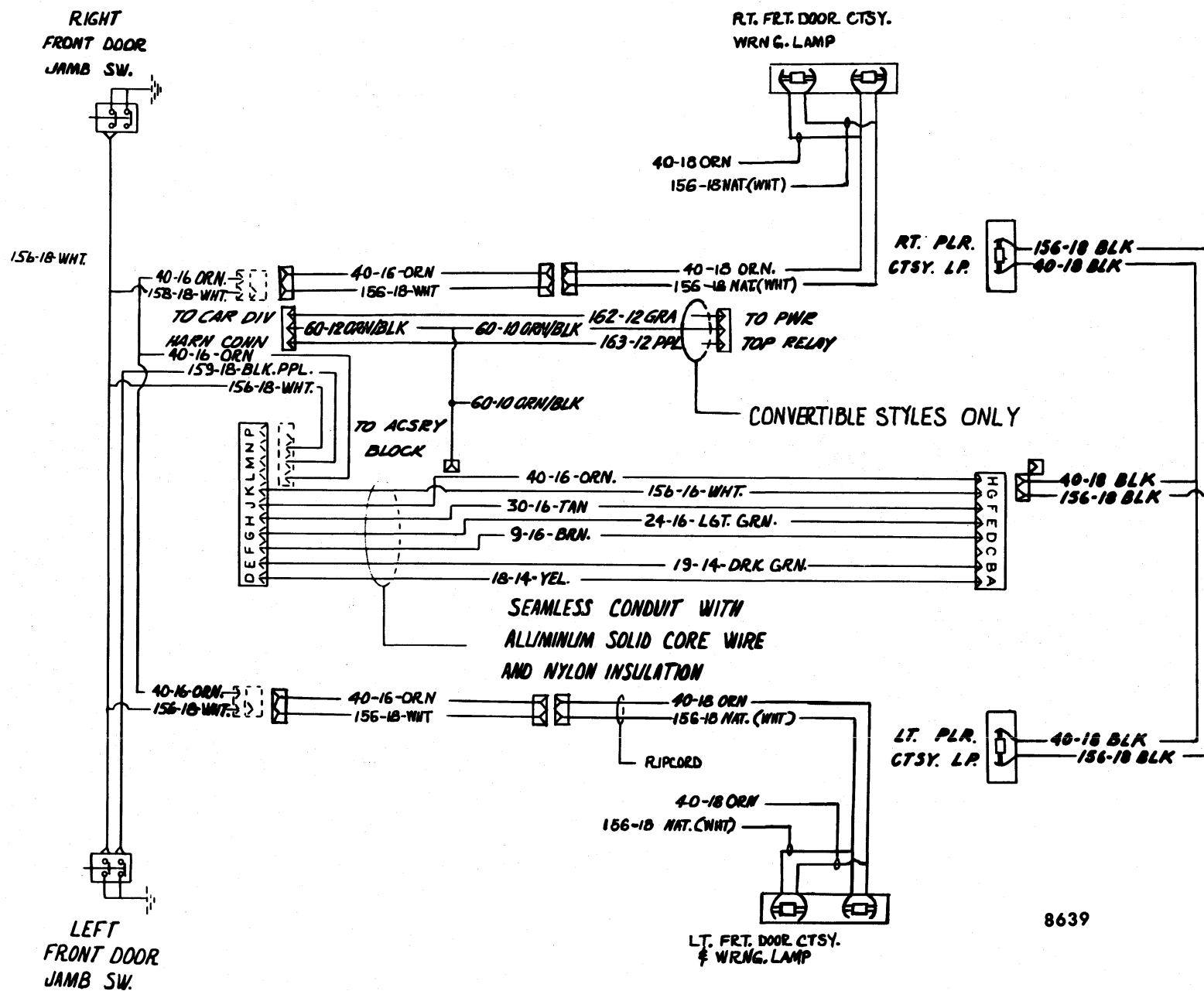


Fig. 10-143-Front Body Harness Circuit Diagram - Buick "B" Styles, Less Station Wagon

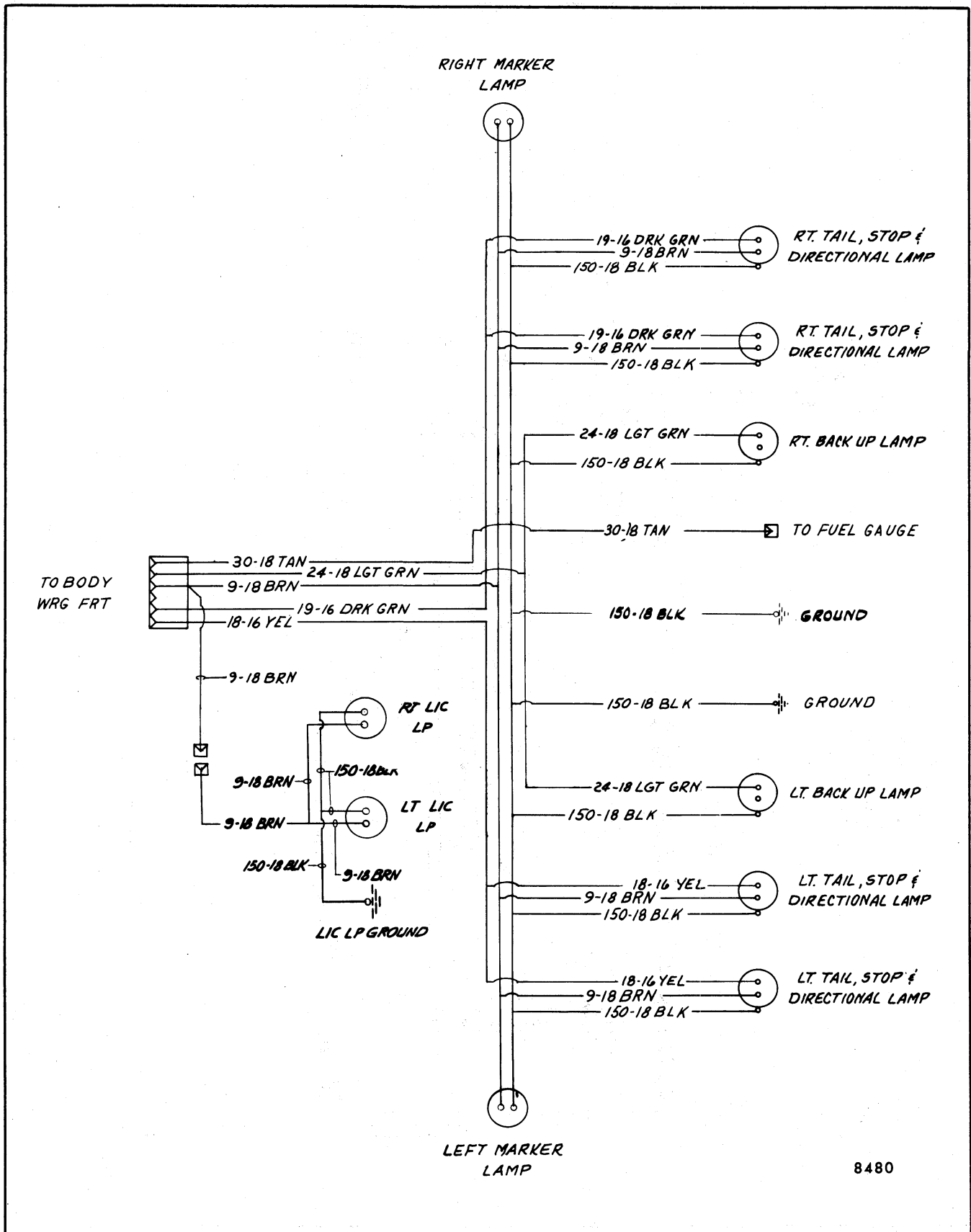


Fig. 10-145-Rear Body Harness Circuit Diagram - Buick "B" Styles, Less Station Wagon

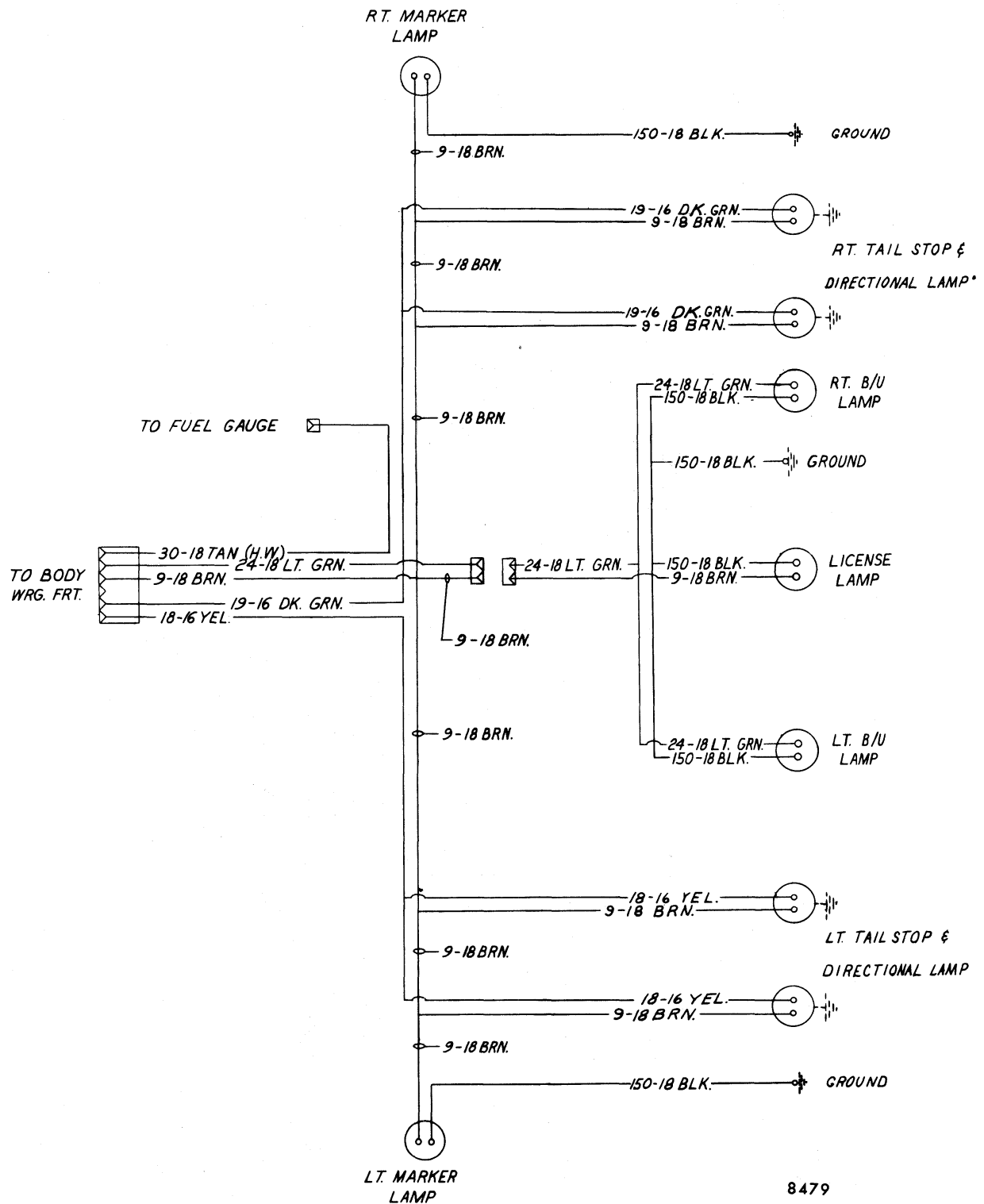
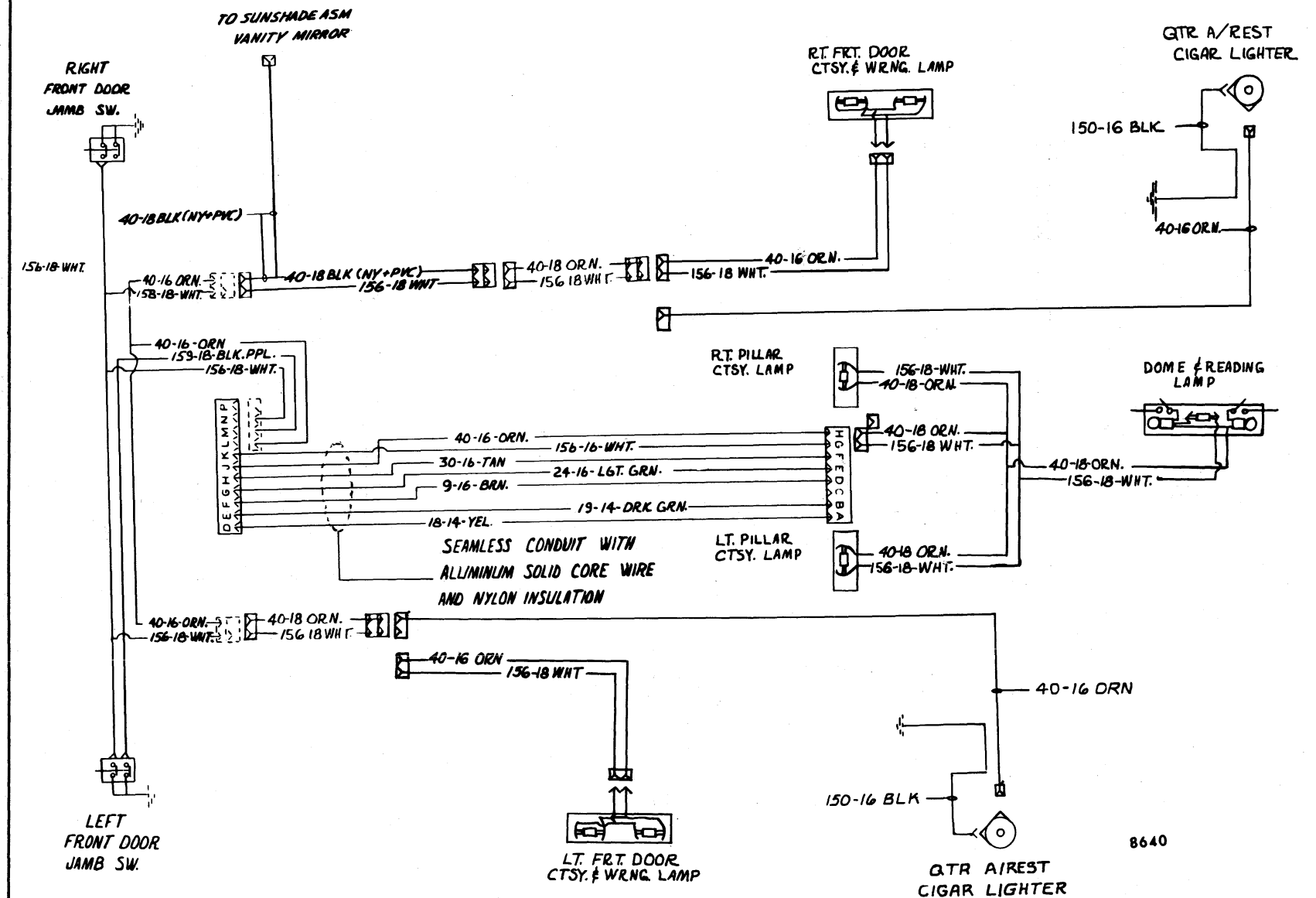
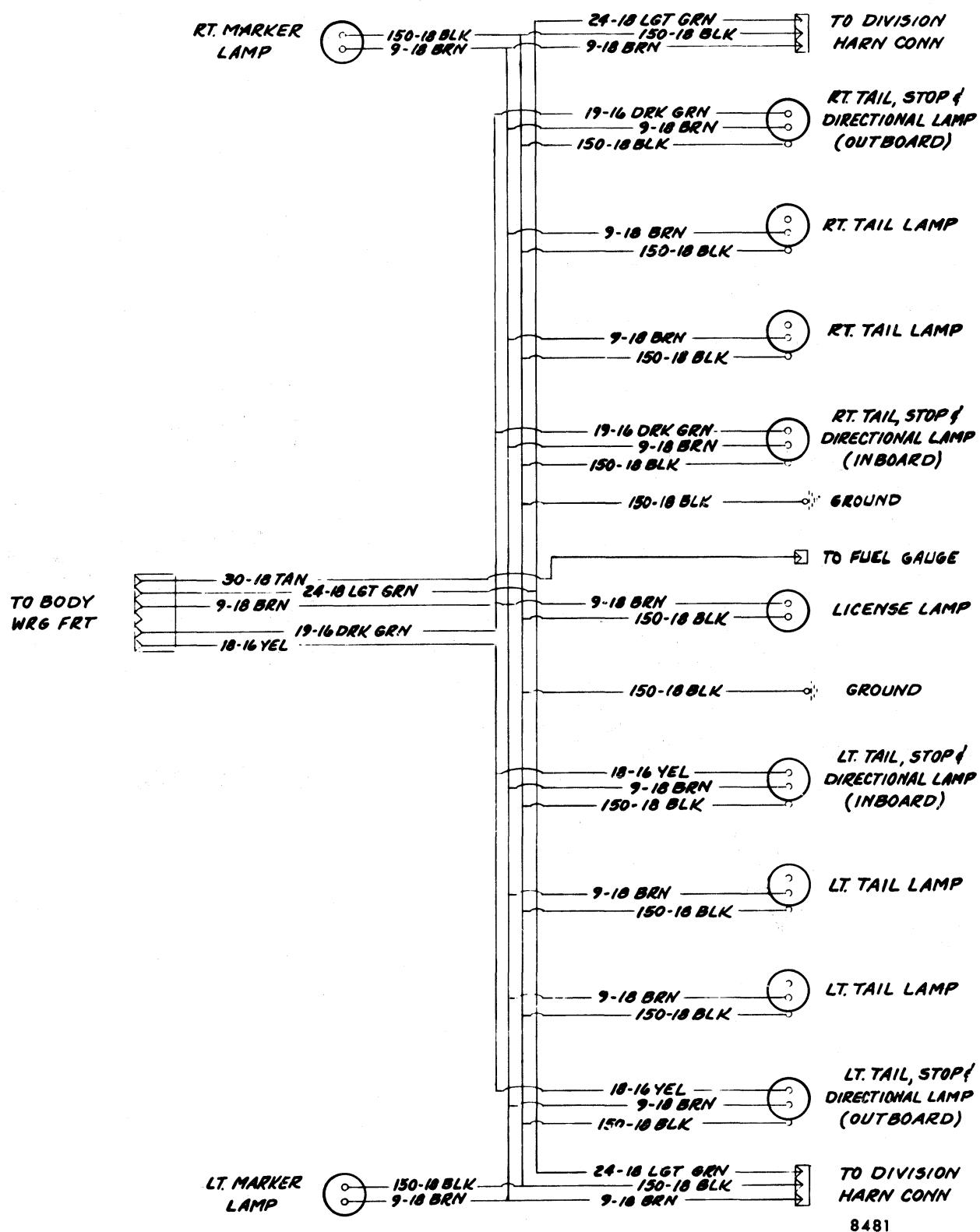


Fig. 10-146-Rear Body Harness Circuit Diagram - Buick "B-35 and 45" Styles

Fig. 10-147-Front Body Harness Circuit Diagram - Buick "C" Styles





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Fig. 10-148-Rear Body Harness Circuit Diagram - Buick "C" Styles

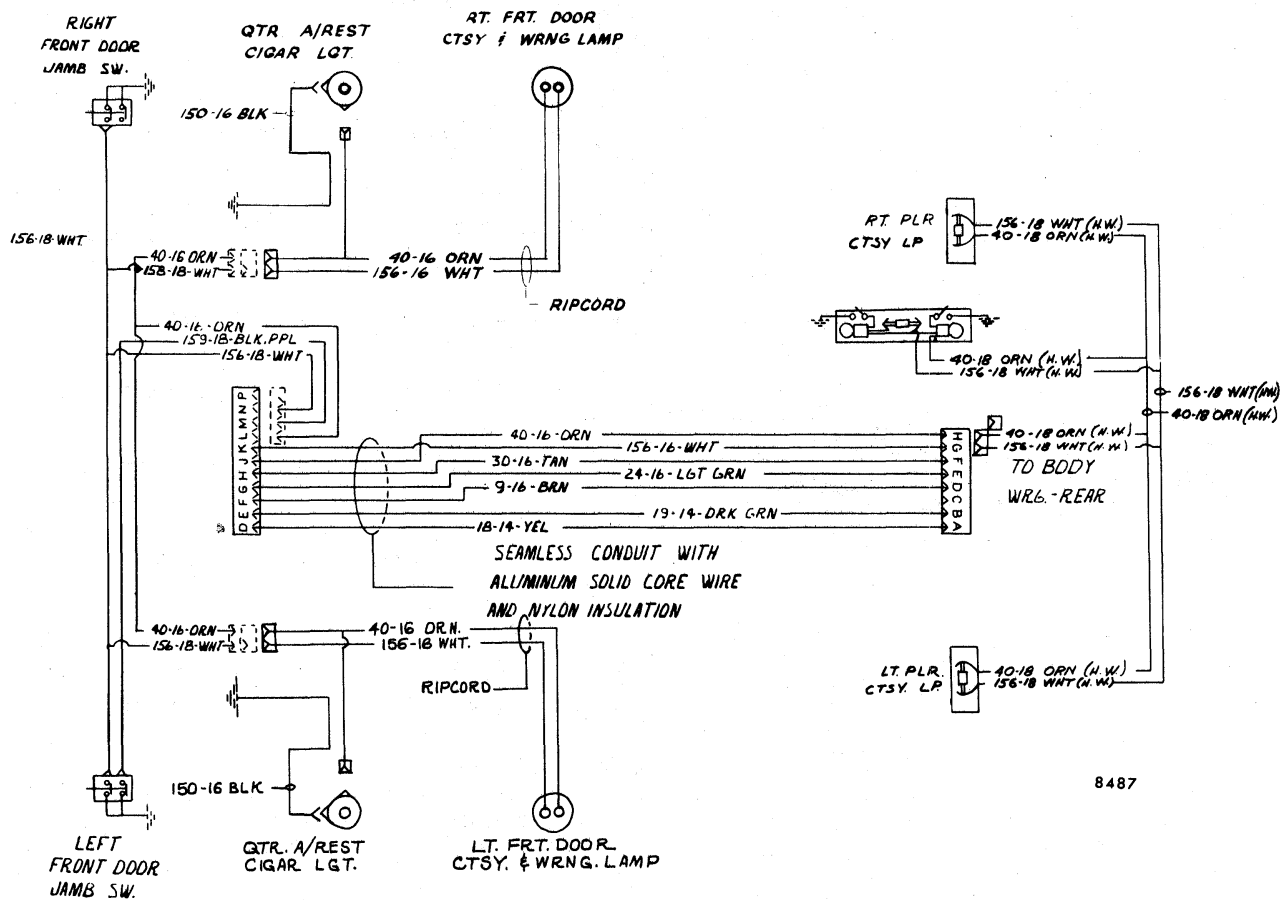


Fig. 10-149-Front Body Harness Circuit Diagram - Buick "E" Style

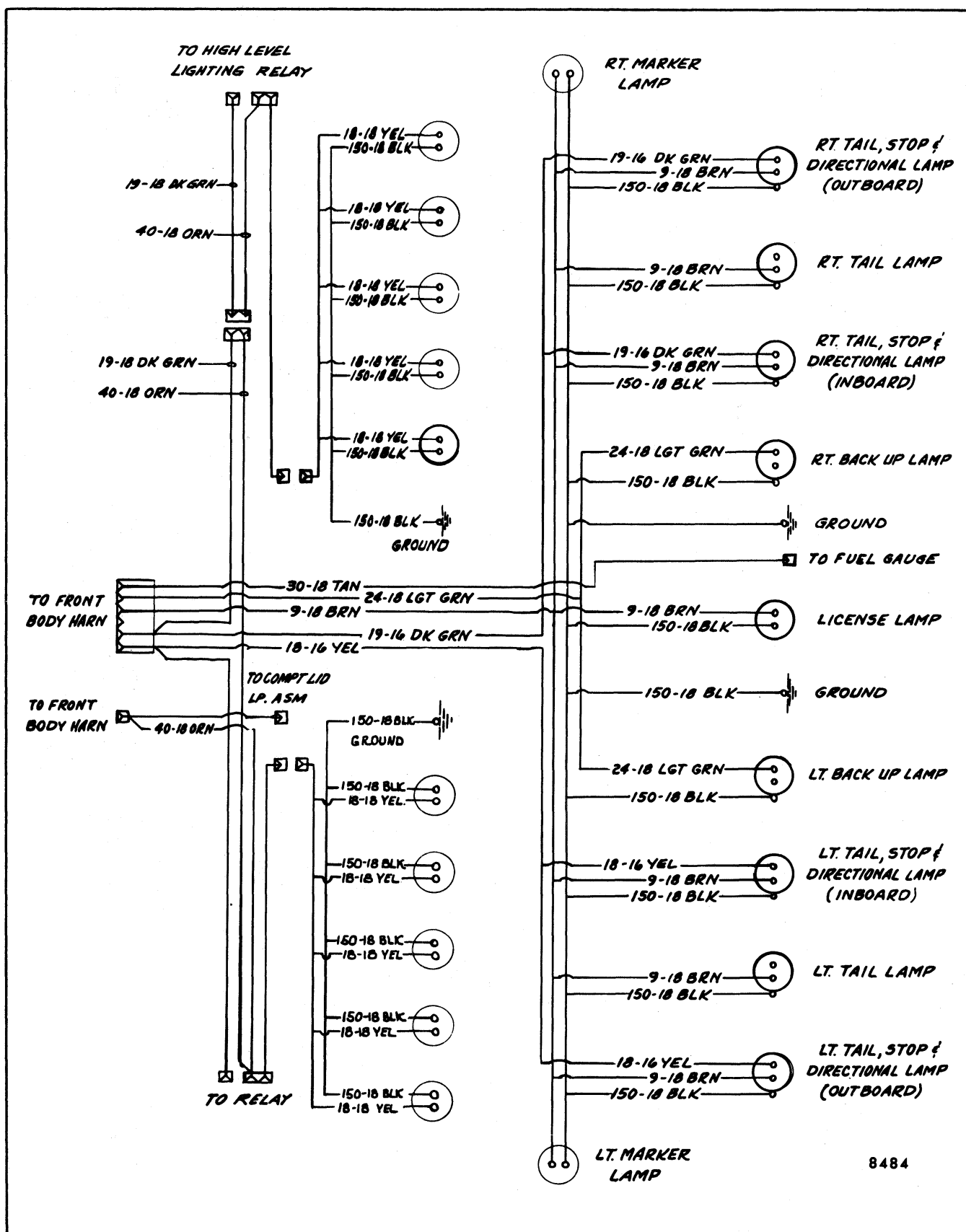
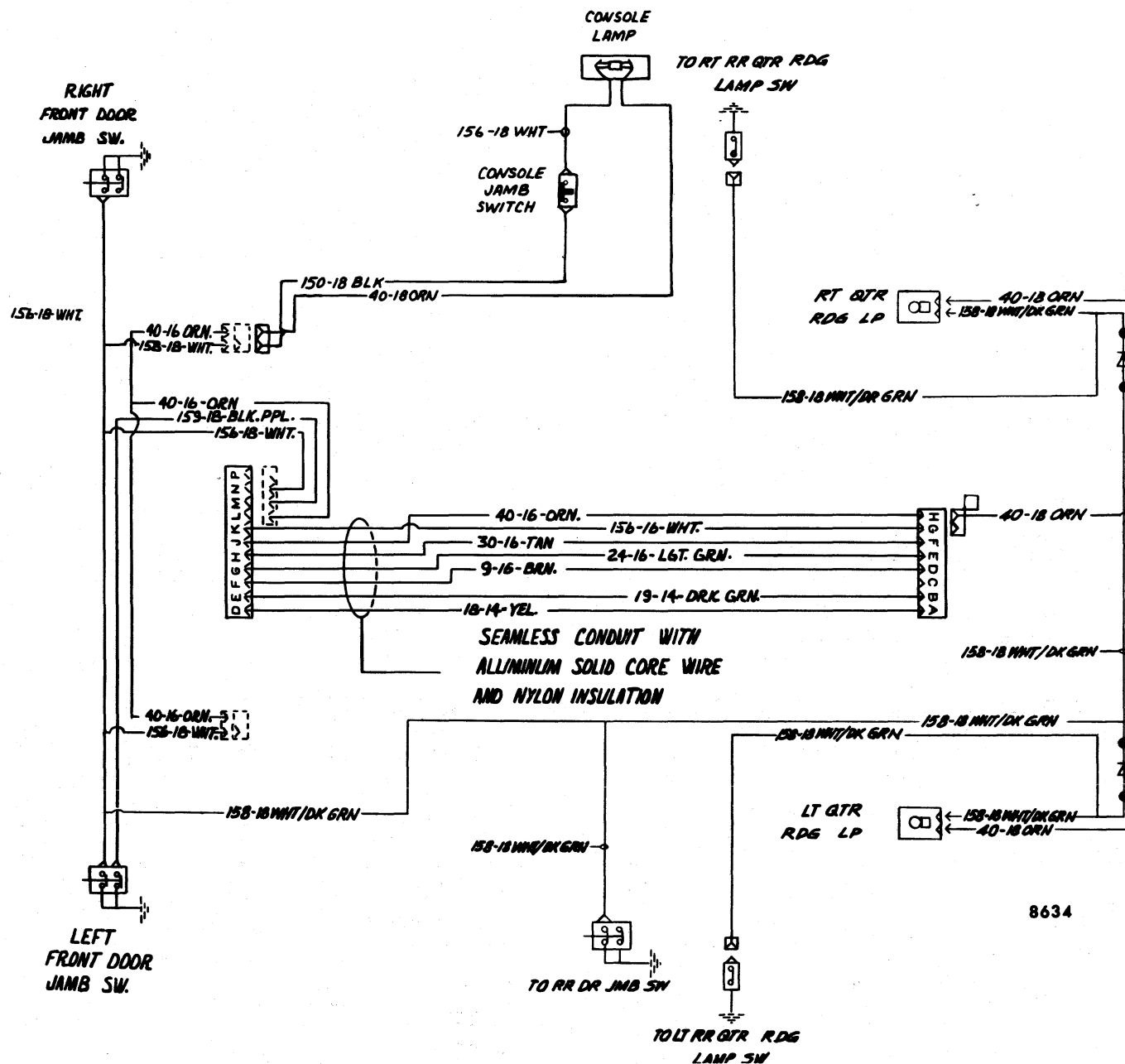


Fig. 10-150-Rear Body Harness Circuit Diagram - Buick "E" Style





Fig. 10-153-Front Body Harness Circuit Diagram (Console and Reading Lamp Circuit) - Cadillac "C-69" Style



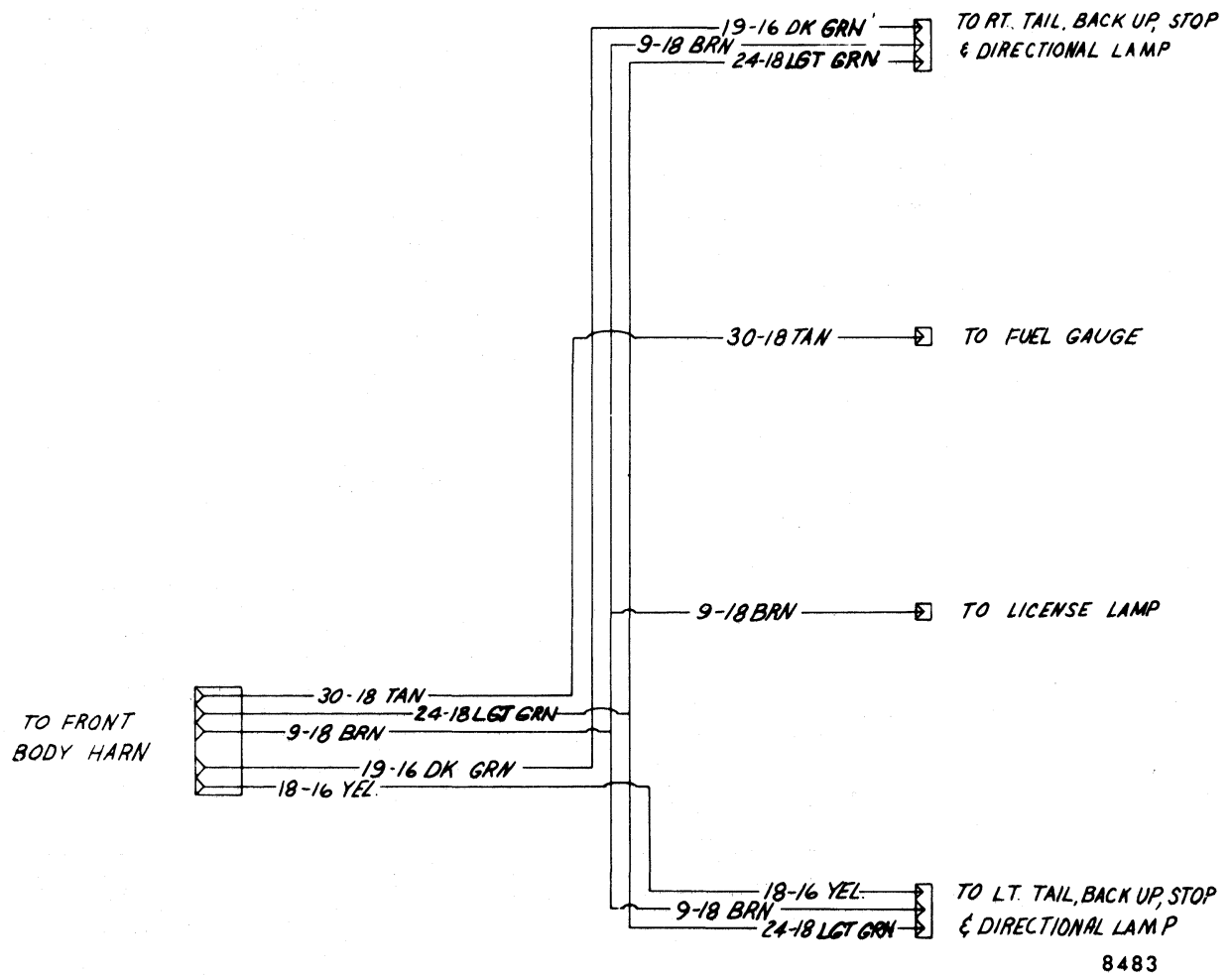


Fig. 10-154-Rear Body Harness Circuit Diagram - Cadillac "C and D" Styles

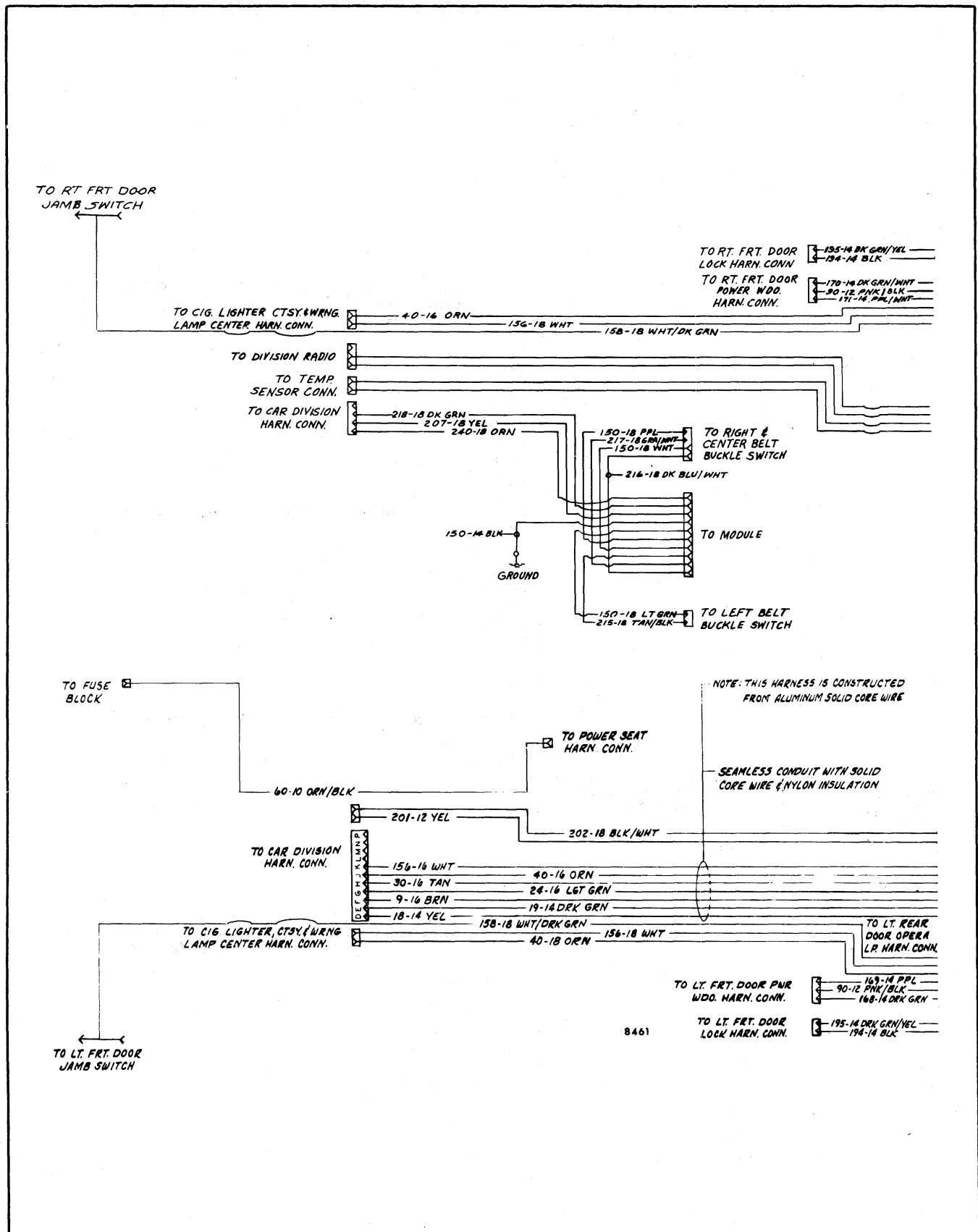


Fig. 10-155-Front Portion of Front Body Harness Circuit Diagram - Cadillac "D-23" Style

Fig. 10-156-Rear Portion of Front Body Harness Circuit Diagram - Cadillac "D-23" Style

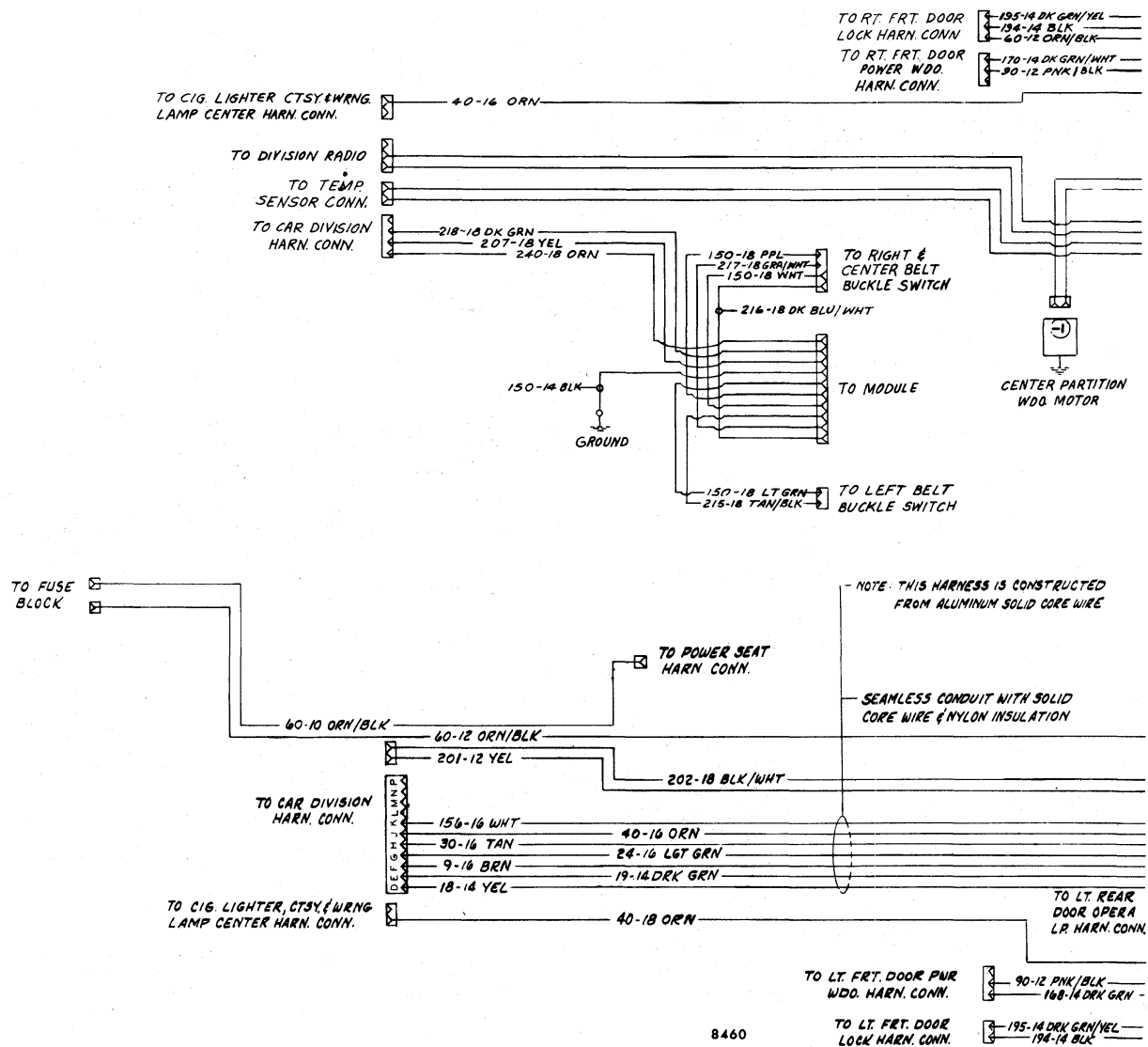


Fig. 10-157-Front Portion of Front Body Harness Circuit Diagram - Cadillac "D-33" Style

Fig. 10-158-Rear Portion of Front Body Harness Circuit Diagram - Cadillac "D-33" Style

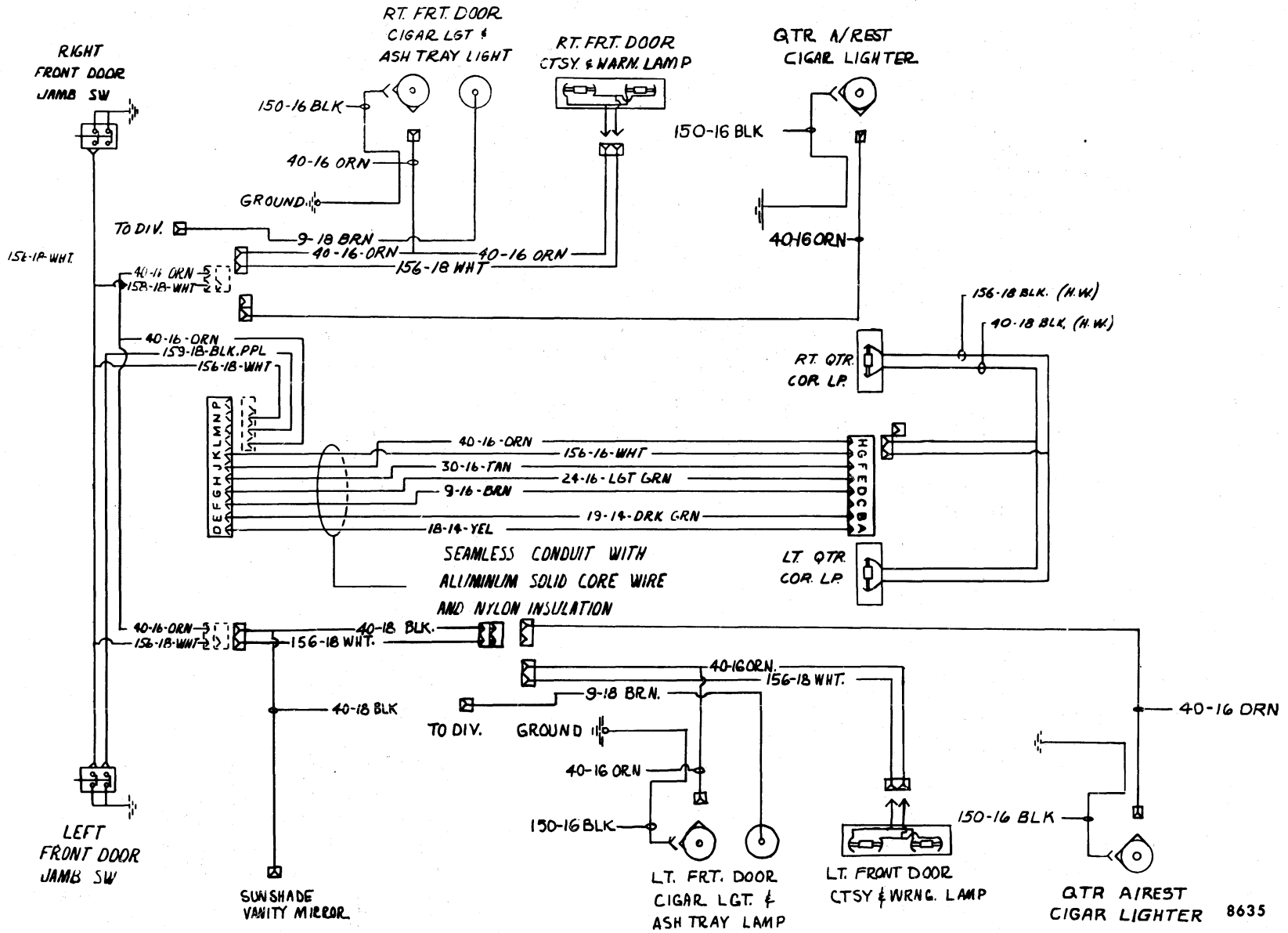
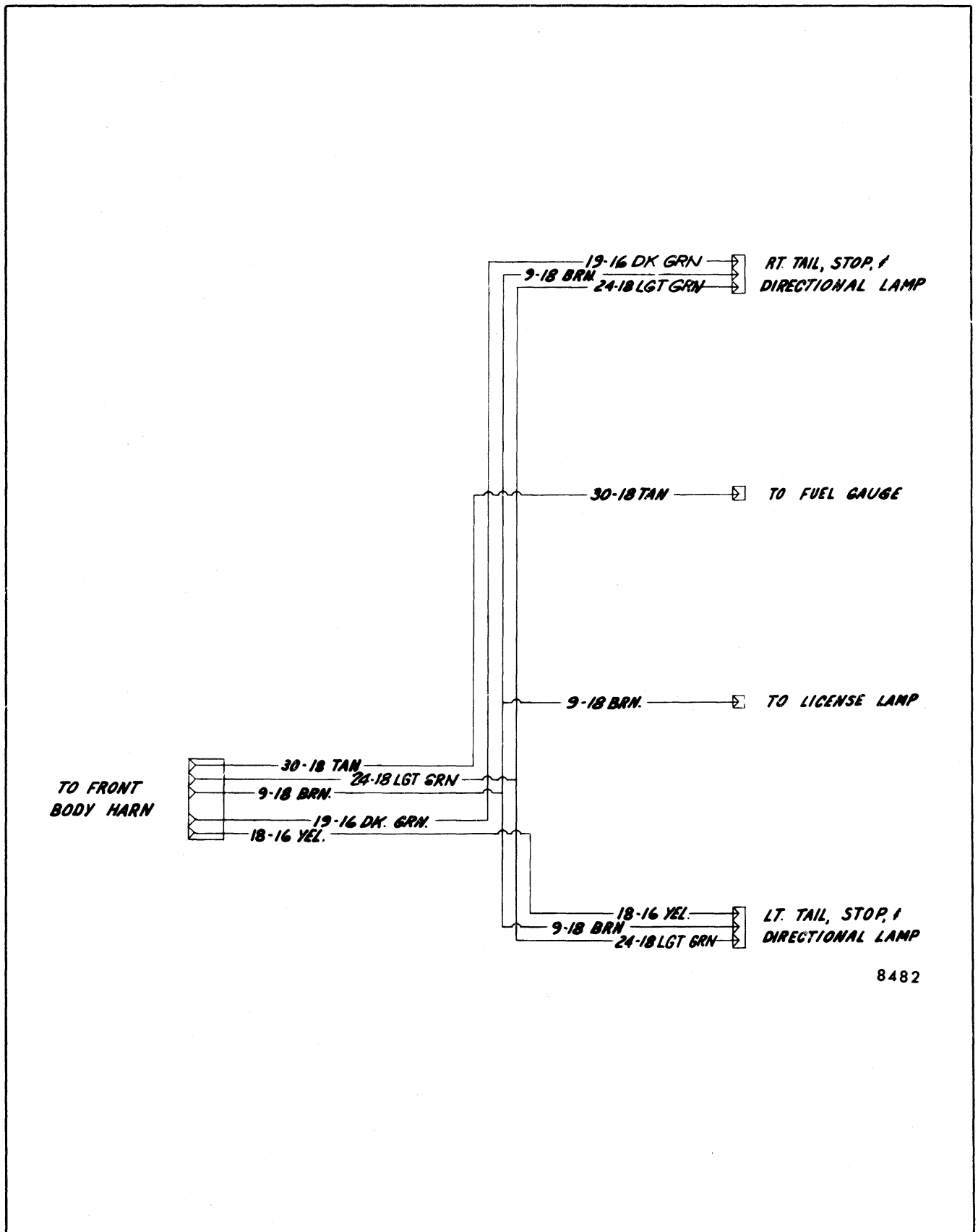


Fig. 10-159-Front Body Harness Circuit Diagram - Cadillac 6EL47 Style



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Fig. 10-160-Rear Body Harness Circuit Diagram - Cadillac "E-47" Styles

SECTION 11

STATIONARY GLASS

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GLASS POLISHING**REMOVAL OF MINOR SCRATCHES AND ABRASIONS****Description**

Minor glass scratches and abrasions can be effectively removed or substantially reduced by utilizing the procedure and precautions presented in this section. The phases of glass polishing discussed in this section includes required equipment.

There are two basic types of automotive glass: (1) laminated safety plate (all windshield glass) and (2) solid tempered safety plate (all side and back glass).

A major concern in glass polishing is preventing double vision from developing in areas that will distort occupant vision. For this reason, less polishing can be done on windshield in occupant's line of vision than in other areas. Distortion is most likely to result when attempting to remove deep scratches.

Glass polishing is an operation that must be performed with reasonable care.

CAUTION: *This operation must not be performed on inside surface of rear window glass equipped with rear window electric grid defogger (heating elements in glass).*

The equipment and procedures recommended here were developed using cerium oxide compound (Glass-Nu or equivalent). Follow manufacturer's directions if other materials are used.

The following equipment is recommended for glass polishing:

1. A low speed (600-1300 RPM) rotary polisher (Skil Model No. 570 or equivalent).
2. A wool felt rotary-type polishing pad, approximately three inches in diameter and two inches thick.
3. Powdered cerium oxide (Glass-Nu or equivalent) mixed with water as the abrasive compound.
4. A wide mouth container to hold the polish.

Glass Polishing Procedure

1. Mix at least three heaping tablespoons of cerium oxide (Glass-Nu or equivalent) with sufficient water to obtain a creamy consistency.

NOTE: If a larger proportion of cerium oxide (Glass-Nu or equivalent) is used, compound cakes on the felt pad faster. If a smaller proportion is used, polishing time required will increase.

2. Agitate mixture occasionally to maintain a creamy consistency. Powdered cerium oxide is insoluble in water and tends to separate.
3. Draw circle around scratches on opposite side of glass with marking crayon or equivalent. Draw other lines directly behind scratches to serve as guides in locating scratch during polishing (Fig. 11-1).
4. Use masking paper where needed to catch drippings or spattered polish.

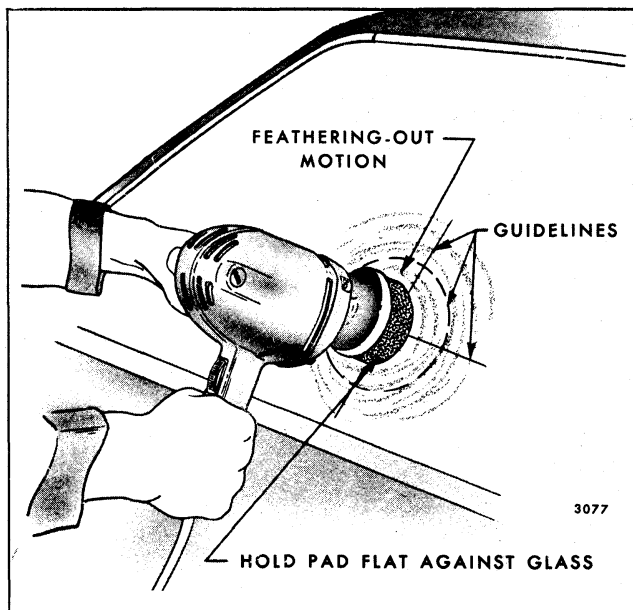


Fig. 11-1-Minor Glass Scratch Removal

5. Dip felt pad attached to polisher into mixture several times to insure that pad is well saturated.

NOTE: Never submerge or allow pad to stay in mixture as it may loosen bond between pad and metal plate.

6. Using moderate, but steady, pressure, hold pad

flat against scratched area of glass, and with a feathering-out motion, polish affected area as shown in Figure 11-1.

CAUTION: Avoid excessive pressure. It does not speed-up operation and may cause overheating of glass.

7. Cover sufficient area around scratch with a feathering-out motion as shown in Figure 11-1, to eliminate any possibility of a "bull's-eye".

CAUTION: Never hold tool in one spot or operate tool on the glass any longer than 30 to 45 seconds at a time. If glass becomes hot to touch, let it air cool before proceeding further. Cooling with cold water may crack heated glass.

8. Dip pad into mixture about every fifteen seconds to insure that wheel and glass are always wet during polishing operation. A dry pad causes excessive heat to develop.
9. After removing scratch or abrasion, wipe body clean of any polish.
10. Clean polishing pad.

NOTE: Care should be taken during polishing and storage to keep pad free of foreign material such as dirt, metal filings, etc.

REVEAL MOLDINGS - STATIONARY GLASS

DESCRIPTION

Reveal moldings around adhesive caulked glass installations are retained by clips which are attached to the body opening by weld-on studs or screws. A projection on the clip engages the reveal molding flange, retaining the molding between the clip and body metal (View "A and B", Fig. 11-2). To disengage a molding from retaining clips, use appropriate tool, or equivalent, shown in Section One of this manual. Windshield side reveal moldings on "B, C, D, E and F" hardtop styles are retained by barbed clips (View "C", Fig. 11-2).

NOTE: A thin flat-bladed tool (putty knife) must be inserted from opposite windshield side of molding to disengage barbed clips while lifting molding.

MOLDING CLIP REPLACEMENT

If a weld stud on an outer panel becomes damaged or broken, use the following procedure:

1. Drill a small hole in the panel adjacent to original weld stud installation.
2. Insert a self-sealing screw through original clip and into outer panel, or replace damaged weld stud with self-sealing screw type weld stud.

If a weld stud, attaching screw, or molding clip becomes damaged or broken and must be replaced in a windshield, back window or quarter window opening, use the following procedure:

1. Drill a small hole in the corner of the glass opening rabbet adjacent to original weld stud or screw installation.
2. Insert a self-sealing screw through alternate replacement clip and into panel (Fig. 11-3).

CAUTION: Avoid contact with edge of glass during drilling operation and when installing clip.

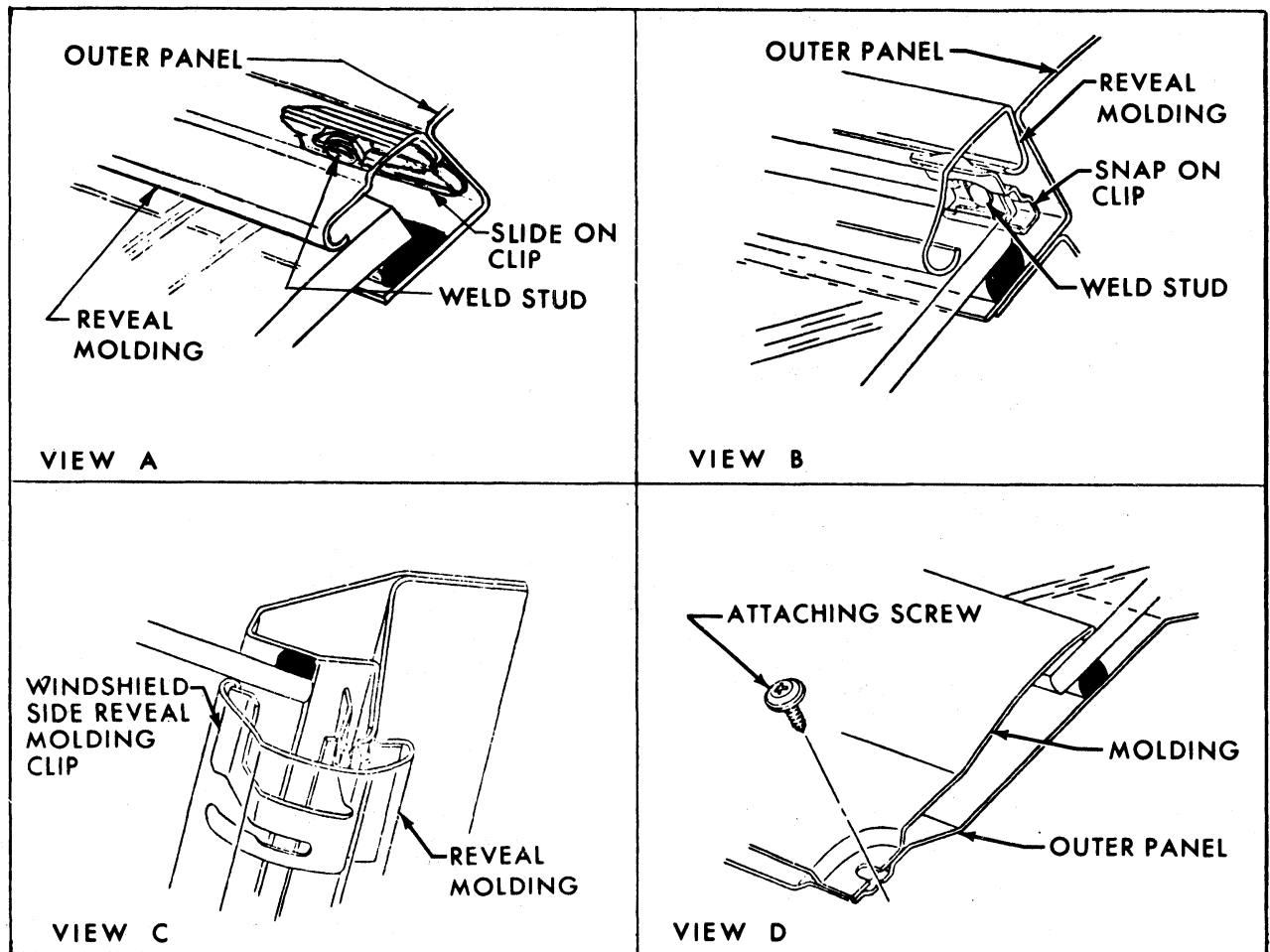


Fig. 11-2 - Reveal Molding Attachments

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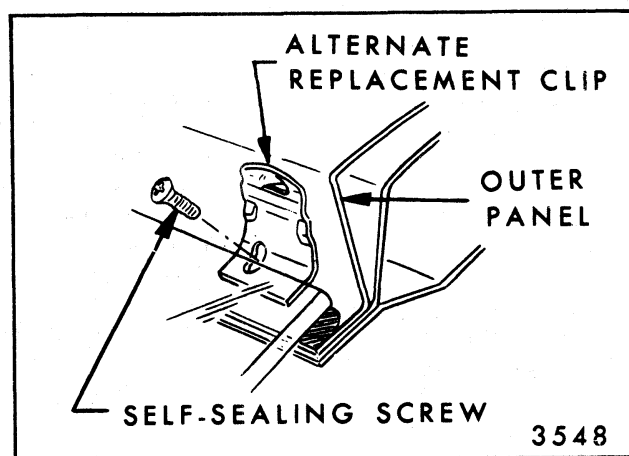


Fig. 11-3 - Reveal Molding Clip Alternate Replacement

STATIONARY GLASS

DESCRIPTION

The windshield on all styles is bonded to body opening with one of two synthetic, self-curing, rubber adhesive materials (1) polysulfide adhesive or (2) urethane adhesive.

Station wagon back windows and quarter windows that are retained with rubber channels are described later in this section. Quarter windows on coupe and sedan styles that are not retained with rubber channels are bonded to the body opening with polysulfide or urethane adhesive or butyl tape.

To replace a window installed with polysulfide or urethane adhesive requires either partial or complete replacement of the adhesive material. Partial replacement of material is referred to as "short method". Complete material replacement is known as "extended method".

The "short method" can be used in those situations where original adhesive material remaining on window opening pinchweld flanges after glass removal can serve as a base for the new glass. This method would be applicable in cases of cracked windshields or removal of windows that are still intact. In these situations, the amount of adhesive that is left in window opening can be controlled during glass removal.

The "extended method" is required when the original adhesive material remaining in window opening after glass removal cannot serve as a base for replacement glass. Examples of this latter situation would be in cases requiring metal work or paint refinishing in the opening, or where there is a considerable loss of adhesion between original adhesive material and body metal. In these cases, original material is removed and replaced with fresh material during window installation.

NOTE: To replace a window installed with butyl tape, the extended method must be used. Butyl tape can be readily identified after molding or trim removal by absence of rubber dam and that it remains soft and does not cure to a rubber type material.

ADHESIVE SERVICE KIT

Adhesive Kit No. 9631000 (urethane adhesive) or equivalent contains some of the materials needed to remove and replace a polysulfide or urethane adhesive installed glass using short method or any adhesive installed glass using extended method. This kit can be obtained through Service Parts System as well as other materials that may be required.

The components of glass adhesive kit (urethane) No. 9631000 or equivalent are as follows:

1. One tube of urethane adhesive material.
2. One dispensing nozzle (cut for "short method" but can be notched-out for "extended method").
3. Steel music wire (.020 diameter).
4. Primer.
5. Filler strip (for use on windshield installations on styles equipped with embedded windshield antenna).
6. Primer applicator.

Additional material required:

1. Solvent for cleaning edge of glass (preferably alcohol).
2. Adhesive dispensing gun No. J-24811 or a standard household cartridge type gun reworked as follows:
 - a. Widen end-slot to accept dispensing end of adhesive material tube.
 - b. Reduce diameter of plunger disc on rod so that disc can enter large end of adhesive material tube.
3. Commercial type razor knife (for cutting around edge of glass).
4. Hot knife (750 degree F) No. J-24709-1 or equivalent, cold knife No. J-24402 or equivalent or two pieces of wood for wire handles.

NOTE: Recent improvements for hot knife No. J-24709 or equivalent, reduce the effort required to cut out a urethane installation. These improvements are a new pull handle, tool J-24709-5 or equivalent and new blade J-24709-6 or equivalent. These changes are incorporated in hot knife No. J-24709-1 or equivalent.

5. Black weatherstrip adhesive.
6. Two side support spacers.
7. Lower support spacers - for "short and extended method" installations.

NOTE: When glass is originally installed, a rubber sealing strip "dam" is used around edges of window to prevent excessive squeeze-out of adhesive material. Service installations do not utilize this part. By applying masking tape around inner perimeter of glass prior to urethane application, excess squeeze-out is picked up and removed with tape.

WINDOW REMOVAL

The window removal procedure is the same for both the "short" and "extended" installation methods with one exception. If the "short method" installation is to be used, more care must be used during removal to make certain that an even, uniform bead of adhesive material remains on window opening to serve as a base for replacement glass. Also, make certain that glass lower support spacers are not disturbed.

1. Place protective coverings around area where glass is being removed.
2. Remove all trim and hardware immediately adjacent to glass being removed. Depending on the glass involved, this could involve reveal moldings, garnish moldings or finishing lace, and windshield wiper arms.
3. On styles equipped with optional rear window electric grid defogger (heating elements in glass), disconnect wire harness connectors from glass. If quarter upper trim removal is required to service connectors, refer to Section 6. If glass is to be reinstalled, tape leads to inside surface of glass to protect them during handling.
4. On styles equipped with radio antenna built into windshield glass, disconnect antenna lead at lower center of windshield. If glass is to be reinstalled, fold and tape lead wire back onto outer surface of windshield to protect it during glass removal and installation.
5. Using edge of glass as a guide, cut adhesive material paddled on side edge of glass with a commercial grade razor knife. Cut material completely around perimeter of glass.
6. To complete removal of original urethane or polysulfide installations, use of 750 degree F hot knife No. J-24709-1 or equivalent or cold knife No. J-24402 or equivalent is recommended. To remove original butyl installation, use cold knife No. J-24402 or equivalent or the following steps.
7. Secure one end of steel music wire to a piece of wood that can serve as a handle. Using long nose

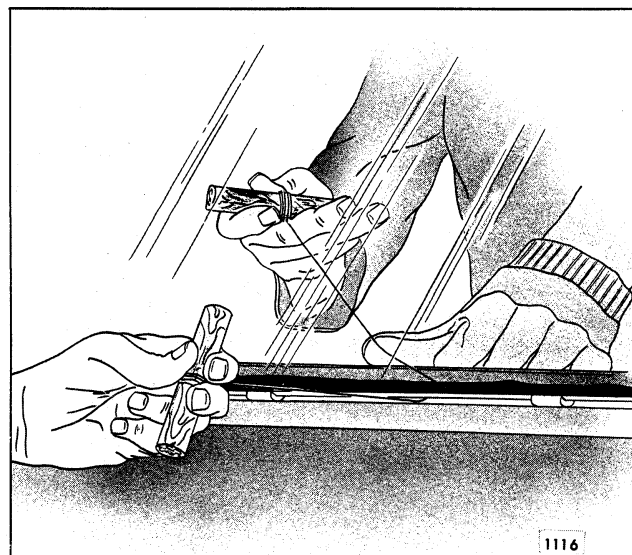


Fig. 11-4-Cutting Adhesive Material

pliers, insert other end of wire through adhesive material at edge of glass; then secure that end of wire to another wood handle (Fig. 11-4).

8. With aid of helper, carefully cut (pull wire) through adhesive material around entire perimeter of window. If "short method" will be used to install new glass, hold wire or cutting tool close to inside plane of glass to prevent cutting an excessive amount of adhesive material from window opening. Keep tension on wire throughout cutting operation to prevent wire from kinking and breaking (Fig. 11-4).

NOTE: Glass removal with wire can be performed by one man. To do so, insert one end of wire through adhesive material at inner upper edge of glass and other end of wire through adhesive material at inner lower edge. Attach handles to both wire ends outside of body (Figs. 11-5 and 11-6).

9. If original glass is to be reinstalled, place it on a protected bench or holding fixture; remove old material using a razor blade or sharp scraper. Any remaining traces of adhesive material can be removed with denatured alcohol or lacquer thinner dampened cloth.

CAUTION: When cleaning laminated glass, avoid contacting edge of plastic laminate material (on edge of glass) with volatile cleaner. Contact may cause discoloration and deterioration of plastic laminate by "wicking" action. **DO NOT** use a petroleum base solvent such as kerosene or gasoline.

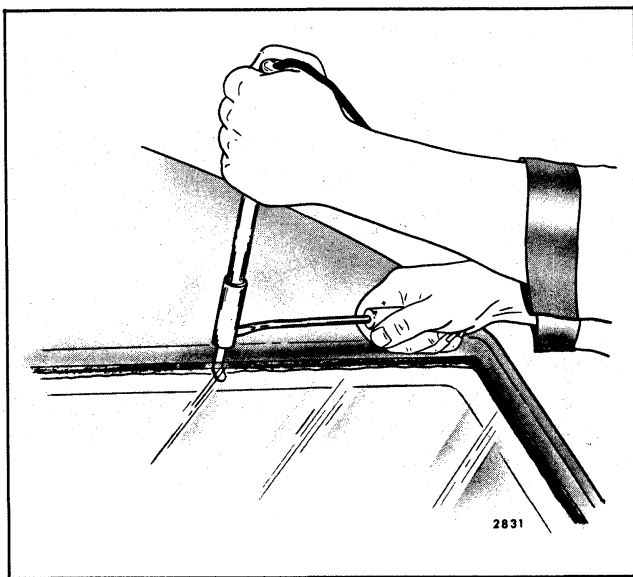


Fig. 11-5-Electric Hot-Knife Removal Method

The presence of oil will prevent adhesion of new material.

Installation - "Short" Method

NOTE: "Short" method installation is intended for original polysulfide or urethane installations only. Butyl tape installations and other installations of unknown material must be replaced using the "extended" method.

1. Inspect reveal molding retaining clips. Replace or reshape clips which are bent away from body metal 1/16" or more.

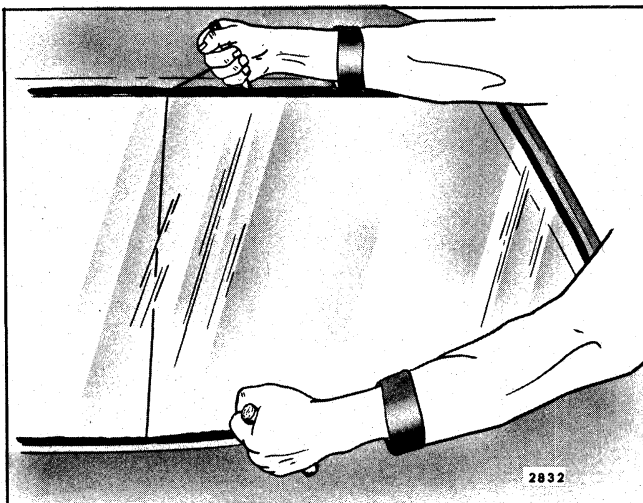


Fig. 11-6-One Man Wire Removal Method

2. Locate lower support spacers No. 7694478 (.34 x .44 x .75) or equivalent as indicated in Figure 11-9 ("A" location) and position glass in the window opening. If new glass is being installed, check relationship of glass to adhesive material on pinchweld flange. Gaps in excess of 1/8" must be corrected by shimming or by applying more adhesive material than specified in step 7.
3. With glass in proper position in opening, apply piece of masking tape over each side edge of glass and adjacent body pillar. Slit tape vertically at edge of glass. During installation, tape on glass can be aligned with tape on body to guide window into desired position. When replacing windshield equipped with embedded antenna, perform the following steps:
 - a. On styles with butyl strip at bottom center of windshield (at antenna lead pigtail), mark location of each end of strip at edge of glass with tape or grease pencil. After glass removal, replace original butyl strip with new strip provided in kit. Stretch or cut new strip as required to fill existing gap on body.
 - b. On styles without butyl strip at bottom center of windshield opening, measure 4 inches both sides of body centerline and using tape or grease pencil, mark location on both glass edge and body. After windshield removal, cut original adhesive material from between marks and insert filler strip provided in kit on body.
- NOTE:** On styles without embedded windshield antenna, butyl strip is not required.
4. Remove glass from opening. If desired, apply 1" wide masking tape to inside of glass 1/4" in-board from edge of glass, across top and down each side to facilitate clean-up after installation.
5. Thoroughly clean surface of glass to which adhesive material will be applied (around edge of inside surface) by wiping with a clean, alcohol dampened cloth. Allow to air dry.
6. Apply primer provided in Urethane Adhesive Kit No. 9631000 or equivalent as follows:

NOTE: Primer must be thoroughly stirred and agitated prior to application to glass.

 - a. On windshields equipped with embedded antenna, apply primer around periphery of glass as shown in Figure 11-11. Do not apply primer between marks established in step 3

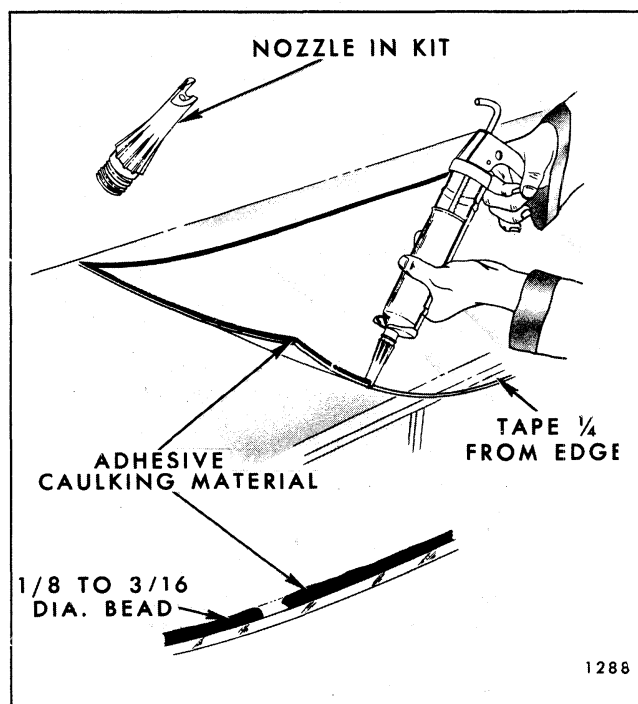


Fig. 11-7-Adhesive Material Application - Short Method

(4" both sides of antenna lead pigtail). Allow primer to dry 5 minutes.

- b. On windshields without embedded antenna and other stationary glass, apply primer around entire perimeter of glass edge and 1/4" inboard on inner surface as in partial application of primer as shown in Figure 11-11. Allow primer to dry 5 minutes.
7. Apply smooth continuous bead of adhesive material over entire inside edge of glass where primed in step 6. Material should be 1/8" to 3/16" in diameter (Fig. 11-7). On windshields with embedded antenna, omit adhesive caulking 4 inches both sides of antenna lead pigtail.
8. With aid of helper, lift glass into window opening. On back window installations it will be necessary to use suction cups to position glass in opening. Windshield glass can be positioned without aid of carrying devices. As shown in Figure 11-8, carry glass with one hand on inside of glass and one hand on outside. At window opening, put glass in horizontal position. While one man holds glass in this position, second man can reach one arm around body pillar and supports glass while other man assumes same position. Quarter window glass can be installed in same manner.
9. With glass centered at opening, place glass on lower supports and use tape guides applied in

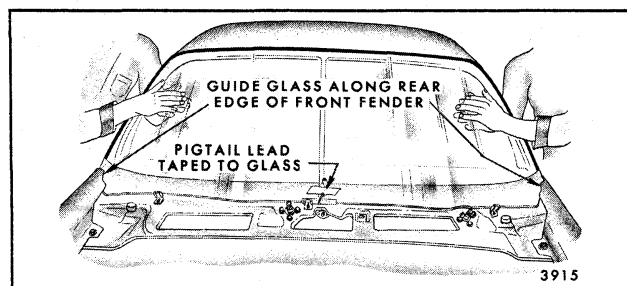


Fig. 11-8-Glass Installation

step 3 to carefully place glass in proper position.

10. Press glass firmly to "wet-out" and "set" adhesive material. Use care to avoid excessive squeeze-out which would cause an appearance problem. Using small disposable brush or flat-bladed tool, paddle material around edge of glass to ensure watertight seal. If necessary, paddle additional material to fill voids in seal. On windshields equipped with embedded antenna, paddle additional material at edges of butyl strip, if required, using care to avoid area near antenna lead pigtail.
11. Watertest car immediately using soft spray. Use warm or hot water if available. Do not direct hard stream of water at fresh adhesive material. If any leaks are encountered, paddle in extra adhesive material at leak point using a small disposable brush or flat-bladed tool.
12. Cement a rubber spacer between both right and left side of glass body metal to assure that glass will remain centered in opening while adhesive material is curing.
13. Install window reveal moldings. Remove clean-up masking tape from inner surface of glass and install remaining parts.
14. On windshield installations, vehicle must remain at normal room temperature (72 degrees F) for six hours to complete proper cure of adhesive material.

Installation - "Extended" Method

If original adhesive material is butyl tape or material remaining in window opening after window removal is damaged, or must be removed to permit refinishing of window opening, or has insufficient adhesion to body metal to serve as a base for replacement glass, it will be necessary to use "extended" installation method.

1. Using sharp scraper or chisel, remove major

portion of old adhesive material from window opening flanges around entire opening. On butyl tape installations or installations of unknown material, it will be necessary to remove all traces of material. On polysulfide or urethane installations, it is not necessary that all traces of material be removed, but there should not be any mounds or loose pieces left.

NOTE: If refinishing or painting operations are required, or painted surface is exposed during removal of material, kit primer should be applied as indicated in step 13c.

2. Inspect reveal molding retaining clips. If upper end of clip is bent away from body metal more than $1/32"$, replace or reform clip.
3. Using black weatherstrip adhesive or adhesive material, cement flat rubber spacers No. 4459429 or equivalent to window opening pinchweld flanges. As shown in Figure 11-9, location "B", spacers should be positioned to provide equal support around entire perimeter of glass.

CAUTION: If weatherstrip adhesive is used, apply sufficient material to obtain watertight seal beneath spacer; however, do not allow excessive squeeze-out. Weatherstrip adhesive is not compatible with replacement adhesive material and waterleaks may develop at locations where these two materials are used together to form seal.

4. Figure 11-9, location "A", illustrates rectangular spacers positioned in typical back window

installation. Reinstall metal supports at lower edge of windshield glass (in lieu of two lower "A" spacers indicated in back window installation).

5. With aid of helper, lift glass into window opening. On back window installations it will be necessary to use suction cups to position glass in opening. The windshield glass can be positioned without aid of carrying devices as described in step 6 (Fig. 11- 8).
6. With one hand on each side of glass, put window in vertical position and support it on lower glass support spacers. While one man holds glass in this position, second man can reach one arm around body pillar and support glass while other man assumes the same position. Quarter window glass can be installed in same manner.
7. With glass positioned in opening, check relationship of glass to pinchweld flange around entire perimeter. Overlap of pinchweld flange should be equal with minimum overlap of $3/16"$. Overlap across top of windshield may be corrected by repositioning lower metal support spacers. Overlap across top of back window may be varied by shimming or shaving lower glass support spacers.

The following spacers are available as service parts.

- a. Part No. 4459429 or equivalent (.20 x .63 x 1.0) stand off spacers for maintaining glass $3/16"$ from body opening - see location "B", Figure 11-9.
- b. Part No. 7694478 or equivalent (.34 x .44 x .75) lower and side support spacers - see locations "A" and "C", Figure 11-9.
- c. Part No. 9848544 or equivalent (.52 x .44 x .75) lower and side support spacers - see locations "A" and "C", Figure 11-9.
- d. Part No. 9613680 or equivalent (.36 x .44 x 1.0) lower and side support spacers - see locations "A" and "C", Figure 11-9.
8. Check relationship of glass contour to body opening. Gap space between glass and pinchweld flange should be no less than $1/8"$ nor more than $1/4"$. If difficulty is encountered staying between these limits, correction can be made by any one of the following methods:

- a. Reposition flat spacers.
- b. Apply more caulking material than is specified at excessive gap areas. Material can be

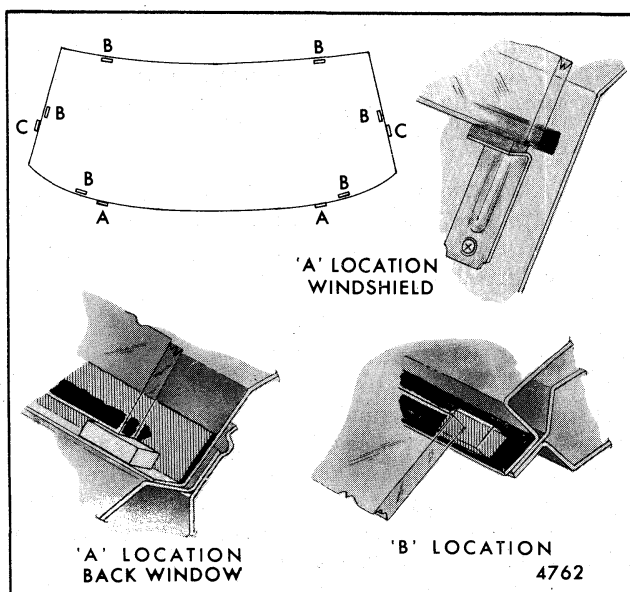


Fig. 11-9-Glass Spacer Installation

applied to pinchweld flange or by allowing bead on glass to exceed $3/8$ " height at gap areas.

- c. Change glasses - another glass may fit opening better.
- d. Rework pinchweld flange.

9. After final adjustments have been made and glass is in proper position, apply pieces of masking tape over edges of glass and body, slit tape at edge of glass. Tape on glass can be aligned with tape on body to guide glass into opening during installation. Remove glass from opening. When replacing windshield equipped with embedded antenna, position new filler strip provided in kit on bottom center of windshield inner surface as shown in Figure 11- 11.

NOTE: On styles without embedded windshield antenna, butyl strip is not required.

10. If desired, apply one-inch masking tape around inner surface of glass $1/4$ " inboard from outer edge. On windshield installations, apply tape to top and sides only. Do not use tape across bottom. Removal of tape after glass installation will aid in clean-up and give a smooth, even edge to adhesive material (Fig. 11-10).
11. Nozzle furnished in kit is designed for "short" method. For "extended" method, enlarge nozzle by removing material within score lines

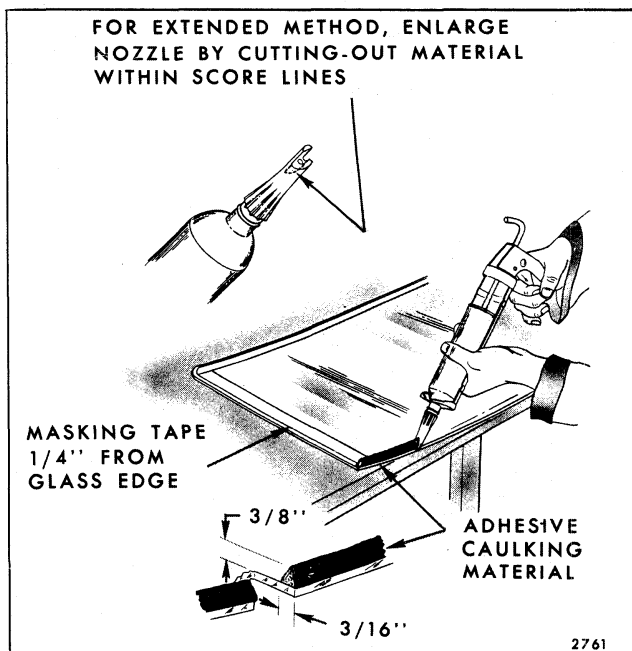


Fig. 11-10-Adhesive Material Application - Extended Method

12. Thoroughly clean surface of glass to which bead of adhesive material will be applied (around edge of inside surface of glass) by wiping with a clean, alcohol dampened cloth. Allow to air dry.

13. Apply primer provided in Urethane Adhesive Kit No. 9631000 or equivalent as follows:

NOTE: Primer must be thoroughly stirred and agitated prior to application.

- a. On windshield equipped with embedded antenna, apply primer around periphery of glass as shown in Figure 11-11. Do not apply primer at location of filler strip applied in step 9. Allow primer to dry 5 minutes.
 - b. On windshields without embedded antenna and other stationary glass, apply primer to entire perimeter of glass edge and $1/4$ " inboard on inner surface as shown in Figure 11-11. Allow primer to dry for 5 minutes.
 - c. Apply primer to any portion of glass opening that required refinishing and painting operations, or any portion that was cleaned of former adhesive sufficiently to expose the painted surface. Allow primer to dry for 5 minutes.
14. With caulking gun and nozzle positioned as illustrated in Figure 11-10, carefully apply smooth continuous bead of adhesive material $3/8$ " high by $3/16$ " wide at base completely around inside edge of glass.
 15. With glass centered at opening, place glass on lower supports and use tape guides applied in step 9 to carefully place glass in proper position. On windshield installation, guide lower outer surface of glass along rear edge of front fenders to avoid smearing fresh adhesive material on instrument panel (Fig. 11-8). Make certain glass is properly aligned to tape guides on pillars, and positioned on lower metal supports. Apply light hand pressure to "wet-out" adhesive material and obtain bond to body opening. Using small disposable brush or flat-bladed tool, paddle material around edge of glass to ensure watertight seal. If necessary, paddle additional material to fill voids in seal. On windshields equipped with embedded antenna, paddle additional material at edges of butyl strip, if required, using care to avoid area near antenna lead pigtail.

16. Watertest immediately using soft spray. Use warm or hot water if available. Do not direct stream of water at fresh adhesive material. Allow water to spill over edges of glass. If water-leak is encountered, use flat-bladed tool to

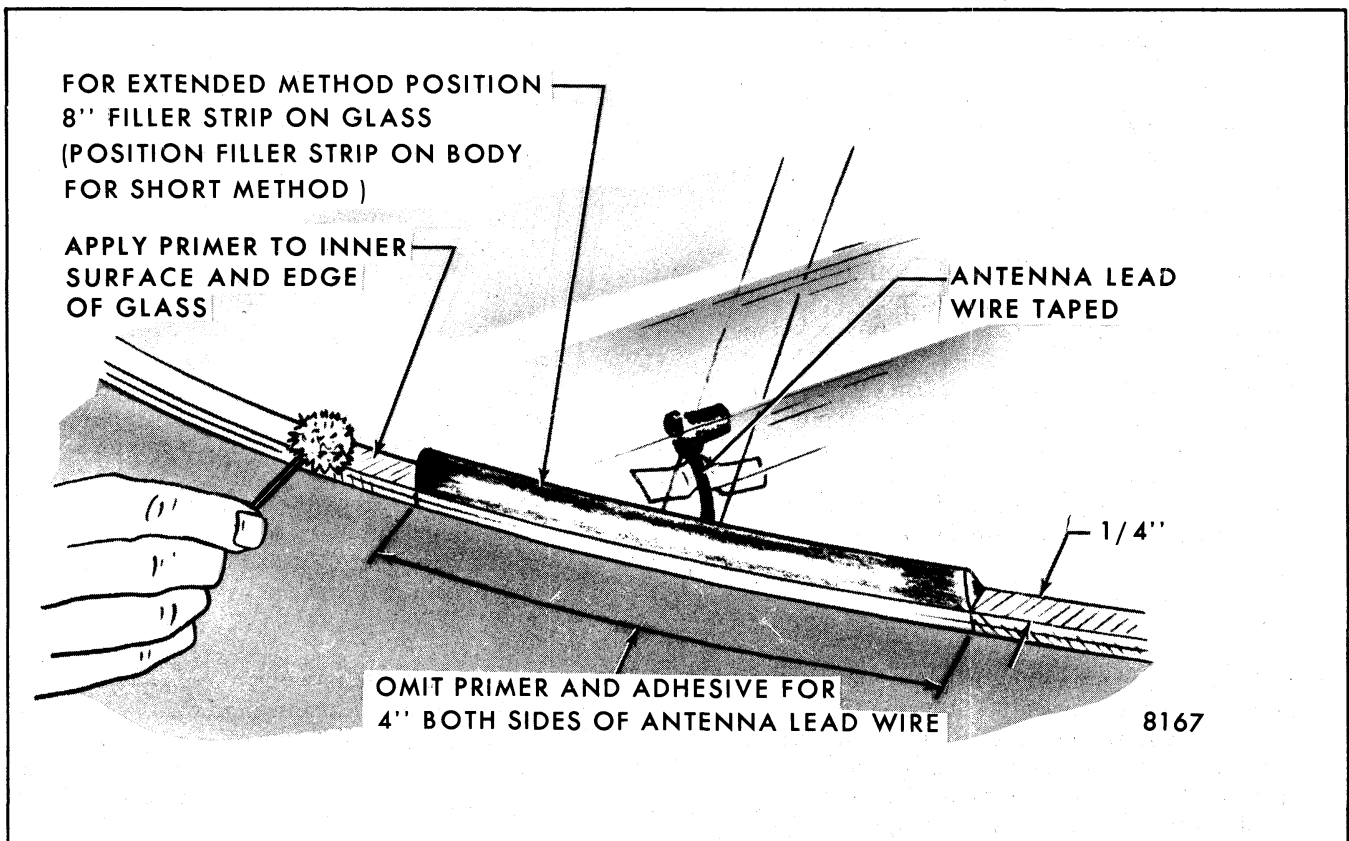


Fig. 11-11-Embedded Windshield Antenna Installation

work-in additional adhesive material at leak point.

17. Cement a rubber spacer between both right and left side of glass and body metal to assure that glass will remain centered in opening while adhesive material is curing.
18. Install window reveal moldings. Then carefully remove masking tape from around inner periphery of window. Pull tape toward center of glass to give a clean-cut edge to adhesive material, and to prevent excess squeeze-out material on tape from creating an additional clean-up problem.
19. Install all other previously removed parts and clean up.
20. On windshield installations, vehicle must remain at normal room temperature (72 degrees F) for six hours to complete proper cure of adhesive material.

COUPE AND SEDAN QUARTER WINDOWS AND COUPE LOUVER QUARTER WINDOW INSTALLED WITH BUTYL RUBBER TAPE ADHESIVE

Quarter windows installed with butyl rubber adhe-

sive should not be replaced with ordinary butyl adhesive currently available for service replacement. Butyl rubber adhesive can be identified in that it remains soft and does not cure to a rubber type material. Replacement of quarter window installed with butyl rubber adhesive requires removal of all butyl material from the body opening, then installing new glass by the "extended" method installation.

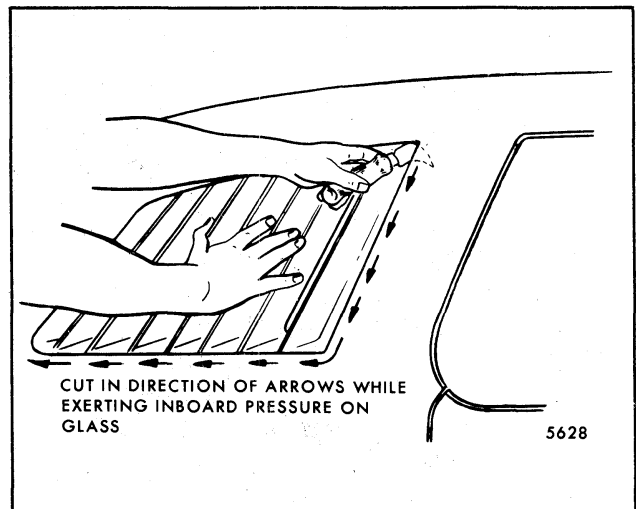


Fig. 11-12-Quarter Window Removal

To remove quarter window or louver assembly from body, perform the following steps:

1. Remove necessary interior trim (refer to Rear Quarter - Section 6).
2. Remove screws and retaining clips holding glass or louver assembly in position.
3. To remove glass or louver assembly, insert lino-

leum knife from exterior of body as shown in Figure 11-12 and cut in direction of arrows while exerting constant inboard pressure until disengaged.

4. Completely remove all traces of butyl material from glass or louver assembly and body opening.
5. To replace glass or louver assembly, use extended method application.

RUBBER CHANNEL RETAINED QUARTER WINDOW AND TAILGATE WINDOW

DESCRIPTION

The stationary rear quarter window on "H and X" styles and tailgate window on "A and H" styles is made of solid tempered safety plate glass and is retained in the body opening by a rubber channel. As shown in Figures 11-13 and 11-14, one cavity of the rubber channel retains the glass, another overlaps the window opening pinchweld flange and a third cavity retains the quarter window front and upper reveal moldings. In addition, the tailgate window rubber channel provides a cavity which incorporates a molding strip. To remove the reveal molding on the quarter window, it is necessary to remove the complete quarter window and rubber channel assembly from the window opening.

Removal

1. Remove screw retained finishing moldings and body lock pillar cover assembly (above belt) from around perimeter of quarter window.
2. Using a flat-bladed tool, carefully break seal between inner lip of rubber channel and pinchweld flange around entire window opening.
3. Carefully push window and rubber channel assembly outboard until it is completely disengaged from window opening.

Installation

1. Scrape major portion of old sealer from rubber channel and window opening and install rubber channel to glass. Install moldings in rubber channel.
2. Insert a strong cord into pinchweld cavity of rubber channel completely around window assembly. Install cord so that ends of cord overlap

at bottom center of window; then tape ends to inside surface of glass.

3. To hold glass, rubber channel and moldings together while loading them into window opening, tie a cord in a vertical plane around the complete assembly.
4. Apply a continuous bead of medium body sealer approximately 1/4" in diameter to window

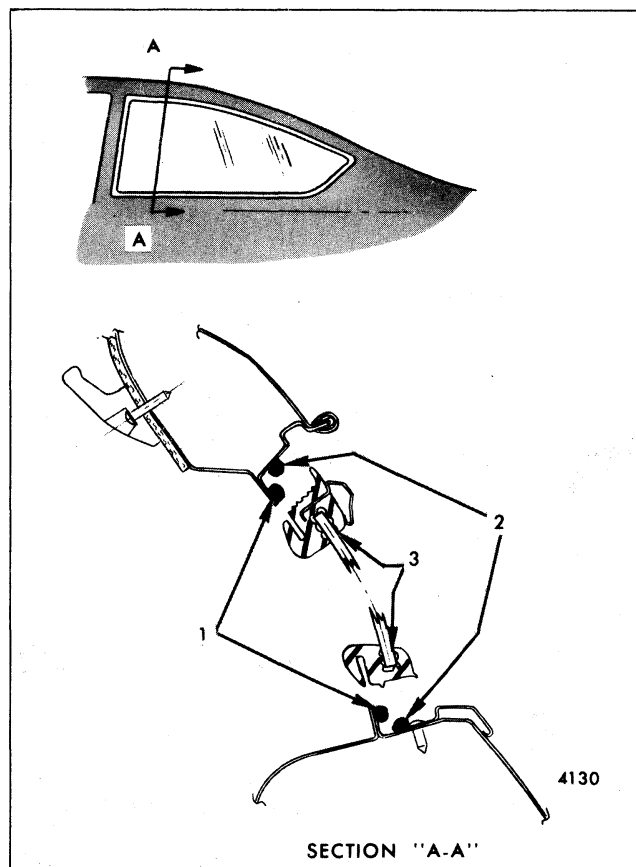


Fig. 11-13-Stationary Quarter Window Installation

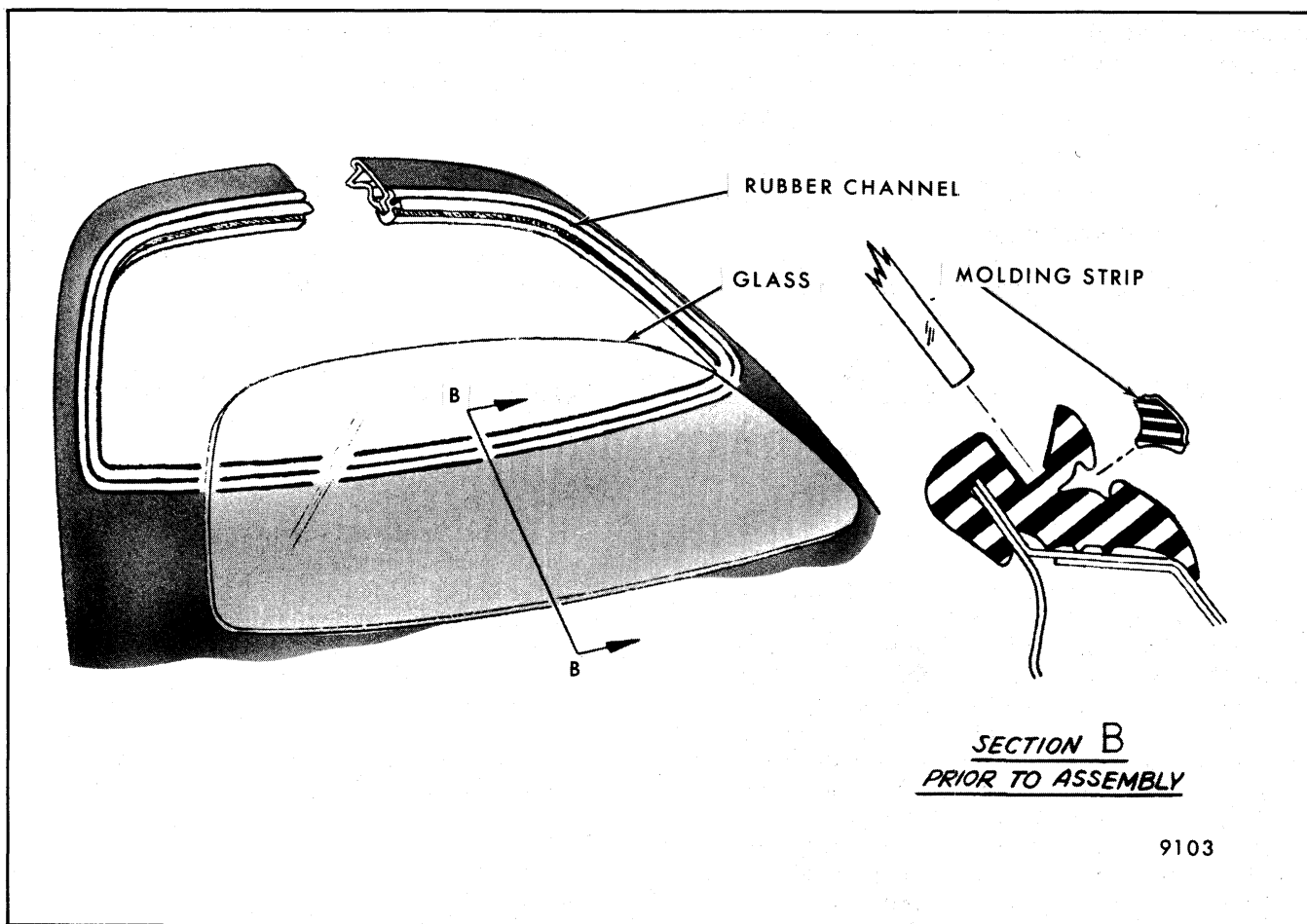


Fig. 11-14-Stationary Tailgate Window Assembly

opening pinchweld flange ("1" in Fig. 11-13) completely around window opening.

5. Apply a second continuous bead of medium body sealer to window opening ("2" in Fig. 11-13) to seal outboard lip of rubber channel.
6. With a helper holding window in position in body opening, carefully remove cord holding rubber channel to glass.
7. While helper is applying pressure to outside surface of glass, on inside of body, grasp both ends

of cord previously inserted in pinchweld cavity of rubber channel. Slowly pull ends of cord straight inboard to seat inner lip of rubber channel over pinchweld flange.

8. Using a pressure type applicator, apply black weatherstrip adhesive between outer lip of rubber channel and glass completely around rubber channel ("3" in Fig. 11-13).
9. Clean off excess sealer and install previously removed parts.

TAILGATE WINDOW RUBBER CHANNEL

DESCRIPTION

The tailgate window on "A and H" station wagon styles is retained in the opening by a rubber channel. The channel provides a cavity on the outer surface to which a molding strip is installed. Once the molding is secure within the cavity, the rubber to glass sealing lip is closed.

Removal

1. Using a flat-bladed tool, slide the molding strip escutcheon to expose the molding joint.
2. Pull one end of molding strip from cavity and continue removing from complete periphery of rubber channel.

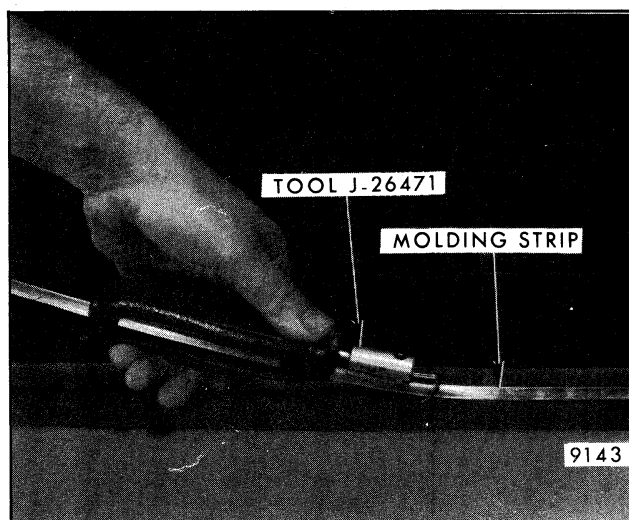


Fig. 11-15-Tailgate Window Molding Installation

3. From inside surface of glass, carefully disengage one upper corner of glass from rubber channel.
4. Continue step 3 until sides and top edge of glass are free from rubber. Carefully lift glass from lower cavity of channel.

NOTE: Once glass is removed from rubber channel, the channel can be removed from the glass opening.

Installation

1. If rubber channel was removed, apply a bead of medium body sealer to pinchweld flange and glass cavity in channel and reinstall to pinchweld flange around glass opening.
2. Position glass in rubber channel bottom horizontal cavity.

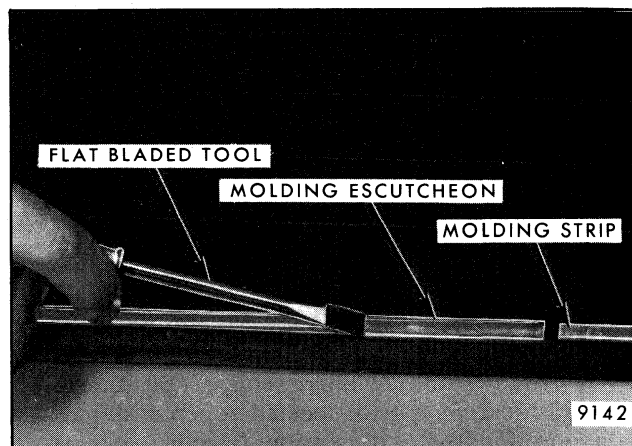


Fig. 11-16-Tailgate Window Molding Escutcheon Installation

3. Using a thin piece of wood or plastic, overlap the sealing lip of rubber channel over entire edge of glass.
4. Using liquid soap, lubricate the molding strip cavity in the rubber channel.
5. Insert one end of molding strip through tool J-26471 (or equivalent) and the inserter eye.
6. Starting at bottom center of channel, insert end of molding strip into cavity.
7. Keeping the inserter eye in the cavity, draw the tool and continue to feed the molding strip into place (Fig. 11-15).
8. Install complete molding strip into rubber channel and using a flat bladed tool, slide escutcheon over molding joint (Fig. 11- 16).

BONDED REAR VIEW MIRROR SUPPORT

DESCRIPTION

The rear view mirror is attached to a support which is secured to the windshield glass. This support is installed by the glass supplier using a plastic-polyvinyl butyral adhesive.

Service replacement windshield glass incorporates the mirror support as part of the glass assembly. In the event that the mirror support becomes detached from the glass, installation can be accomplished using Locite Minute-Bond Adhesive 312, Catalog No. 33-33, available through Loctite distributors, or an equivalent.

To install a detached mirror support or install a new part, the following materials are recommended:

1. Loctite Minute-Bond Adhesive 312 two component pack, Catalog No. 33-33, or equivalent.
2. Replacement rear view mirror support, Service Part No. 9831062 (or equivalent), or original mirror support, prepared per steps 3 and 4 of installation procedure.
3. Wax marking pencil, or crayon.

4. Rubbing alcohol.
5. Clean paper towels.
6. Fine grit emery cloth or sand paper (No. 320 or No. 360).
7. Clean toothpick.

Installation

1. Determine rear view mirror support position on windshield. Support is located at center of glass at one of following dimensions from base of glass to base of support (dimension "A", Fig. 11-17):
 - a. 20-1/4" - "B-39,47,57 and 67" styles (less 2BP47) and "E- 47,57 and 67" styles.
 - b. 20-3/4" - "B-35,45,49,69" and 2BP47 styles and "C-37 and 47" styles.
 - c. 20-7/8" - "F" styles.
 - d. 21-1/4" - "C-39-49 and 69" styles and "D-23 and 33" styles.
 - e. 19-3/4" - all "A" body styles.
 - f. 18-3/16" - all "X" body styles.
 - g. 19" - all "H" body styles (less "07, 27" and "77").
 - h. 21-3/16" - "H-07 and 27" styles.
 - i. 18-3/8" - "H-77" style.
2. When location is determined, mark location on outside of glass with wax pencil or crayon. Also make larger diameter circle around the mirror support circle on the outside glass surface (see Fig. 11-17).
3. On inside glass surface, clean large circle with paper towel and domestic scouring cleanser, glass cleaning solution or polishing compound. Rub until area is completely clean and dry. When dry, thoroughly clean area with an alcohol saturated paper towel to remove any traces of scouring powder or cleaning solution from this area.
4. With piece of fine grit (No. 320 or No. 360)

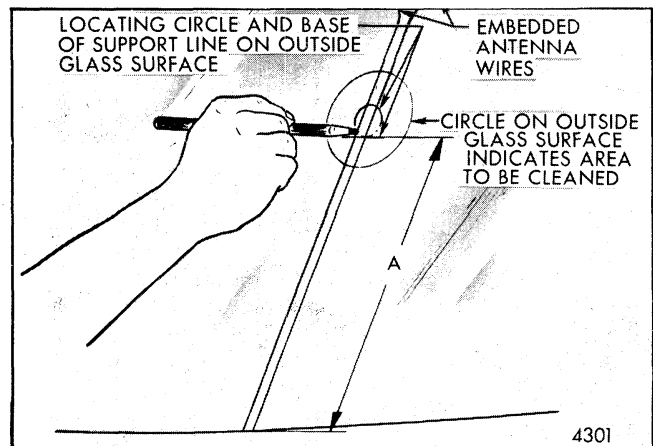


Fig. 11-17-Locating Bonded Rear View Mirror Support on Glass

emery cloth or sandpaper, completely sand bonding surface of new rear view mirror support, Part No. 9831062 (or equivalent), or factory installed support.

CAUTION: If original rear view mirror support is to be reused, ALL traces of factory installed vinyl patch must be removed prior to reinstallation.

5. Wipe sanded mirror support with clean paper towel saturated with alcohol, and allow to dry.
6. With spray can of accelerator material provided in Loctite Kit (or equivalent), lightly spray minute-bond accelerator to bonding surfaces of mirror support and windshield glass, and allow to dry completely.
- NOTE:** Due to rapid bond of adhesive, the following steps must be performed without hesitation.
7. When both bonding surfaces have dried, apply two drops of adhesive to mirror support, and with toothpick quickly distribute adhesive evenly over entire bonding surface of mirror support.
8. Properly position support to its premarked location, with rounded end pointed upward; press support against glass for 30 to 60 seconds, exerting steady pressure against glass. After five minutes, any excess adhesive may be removed with an alcohol moistened paper towel or glass cleaning solution.

SECTION 12

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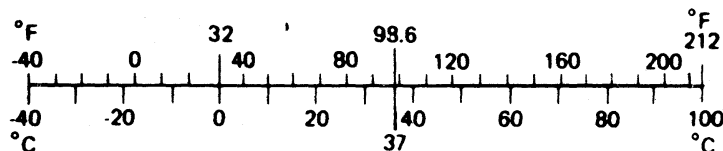
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METRIC-ENGLISH CONVERSION TABLE

Multiply	by	to get equivalent number of:	Multiply	by	to get equivalent number of:
LENGTH			ACCELERATION		
Inch	25.4	millimetres (mm)	Foot/sec ²	0.304 8	metre/sec ² (m/s ²)
Foot	0.304 8	metres (m)	Inch/sec ²	0.025 4	metre/sec ²
Yard	0.914 4	metres	TORQUE		
Mile	1.609	kilometres (km)	Pound-inch	0.112 98	newton-metres (N-m)
AREA			Pound-foot	1.355 8	newton-metres
Inch ²	645.2	millimetres ² (mm ²)	POWER		
Foot ²	6.45	centimetres ² (cm ²)	Horsepower	0.746	kilowatts (kW)
Yard ²	0.092 9	metres ² (m ²)	PRESSURE OR STRESS		
	0.836 1	metres ²	Inches of water	0.249 1	kilopascals (kPa)
VOLUME			Pounds/sq. in.	6.895	kilopascals
Inch ³	16 387.	mm ³	ENERGY OR WORK		
	16.387	cm ³	BTU	1 055.	joules (J)
Quart	0.016 4	litres (l)	Foot-pound	1.355 8	joules
Gallon	0.946 4	litres	Kilowatt-hour	3 600 000.	joules (J = one W's)
Yard ³	3.785 4	litres		or 3.6x10 ⁶	
	0.764 6	metres ³ (m ³)	LIGHT		
MASS			Foot candle	1.076 4	lumens/metre ² (lm/m ²)
Pound	0.453 6	kilograms (kg)	FUEL PERFORMANCE		
Ton	907.18	kilograms (kg)	Miles/gal	0.425 1	kilometres/litre (km/l)
Ton	0.907	tonne (t)	Gal/mile	2.352 7	litres/kilometre (l/km)
FORCE			VELOCITY		
Kilogram	9.807	newtons (N)	Miles/hour	1.609 3	kilometres/hr. (km/h)
Ounce	0.278 0	newtons			
Pound	4.448	newtons			
TEMPERATURE					
Degree Fahrenheit	(°F-32) ÷ 1.8	degree Celsius (C)			



HOW TO USE CONVERSION CHARTS

Left Column is units of 10, (0, 10, 20, 30 etc.);
Top Row is in units of one (0, 1, 2, 3, etc).

EXAMPLE: Feet to Inches Conversion Chart

feet	0	1	2	3	4	5	6	7	8	9	feet
	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	
--		12	24	36	48	60	72	84	96	108	--
10	120	132	144	156	168	180	192	204	216	228	10
20	240	252	264	276	288	300	312	324	336	348	20
30	360	372	384	396	408	420	432	444	456	468	30
40	480	492	504	516	528	540	552	564	576	588	40
50	600	612	624	636	648	660	672	684	696	708	50

12 feet equals 144 inches. Read across from 10 and down from 2.

6 feet equals 72 inches. Read down from 6.

FEET TO METRES

ft	0	1	2	3	4	5	6	7	8	9	ft
	m	m	m	m	m	m	m	m	m	m	
--		0.305	0.610	0.914	1.219	1.524	1.829	2.134	2.438	2.743	--
10	3.048	3.353	3.658	3.962	4.267	4.572	4.877	5.182	5.486	5.791	10
20	6.096	6.401	6.706	7.010	7.315	7.620	7.925	8.230	8.534	8.839	20
30	9.144	9.449	9.754	10.058	10.363	10.668	10.973	11.278	11.582	11.887	30
40	12.192	12.497	12.802	13.106	13.411	13.716	14.021	14.326	14.630	14.935	40
50	15.240	15.545	15.850	16.154	16.459	16.764	17.069	17.374	17.678	17.983	50
60	18.288	18.593	18.898	19.202	19.507	19.812	20.117	20.422	20.726	21.031	60
70	21.336	21.641	21.946	22.250	22.555	22.860	23.165	23.470	23.774	24.079	70
80	24.384	24.689	24.994	25.298	25.603	25.908	26.213	26.518	26.822	27.127	80
90	27.432	27.737	28.042	28.346	28.651	28.956	29.261	29.566	29.870	30.175	90
100	30.480	30.785	31.090	31.394	31.699	32.004	32.309	32.614	32.918	33.223	100

METRES TO FEET

m	0	1	2	3	4	5	6	7	8	9	m
	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	
--		3.2808	6.5617	9.8425	13.1234	16.4042	19.6850	22.9659	26.2467	29.5276	--
10	32.8084	36.0892	39.3701	42.6509	45.9318	49.2126	52.4934	55.7743	59.0551	62.3360	10
20	65.6168	68.8976	72.1785	75.4593	78.7402	82.0210	85.3018	88.5827	91.8635	95.1444	20
30	98.4252	101.7060	104.9869	108.2677	111.5486	114.8294	118.1102	121.3911	124.6719	127.9528	30
40	131.2336	134.5144	137.7953	141.0761	144.3570	147.6378	150.9186	154.1995	157.4803	160.7612	40
50	164.0420	167.3228	170.6037	173.8845	177.1654	180.4462	183.7270	187.0079	190.2887	193.5696	50
60	196.8504	200.1312	203.4121	206.6929	209.9738	213.2546	216.5354	219.8163	223.0971	226.3780	60
70	229.6588	232.9396	236.2205	239.5013	242.7822	246.0630	249.3438	252.6247	255.9055	259.1864	70
80	262.4672	265.7480	269.0289	272.3097	275.5906	278.8714	282.1522	285.4331	288.7139	291.9948	80
90	295.2756	298.5564	301.8373	305.1181	308.3990	311.6798	314.9606	318.2415	321.5223	324.8032	90
100	328.0840	331.3648	334.6457	337.9265	341.2074	344.4882	347.7690	351.0499	354.3307	357.6116	100

MILES TO KILOMETRES

mile	0	1	2	3	4	5	6	7	8	9	mile
	km	km	km	km	km	km	km	km	km	km	
--		1.609	3.219	4.828	6.437	8.047	9.656	11.265	12.875	14.484	--
10	16.093	17.703	19.312	20.921	22.531	24.140	25.750	27.359	28.968	30.578	10
20	32.187	33.796	35.406	37.015	38.624	40.234	41.843	43.452	45.062	46.671	20
30	48.280	49.890	51.499	53.108	54.718	56.327	57.936	59.546	61.155	62.764	30
40	64.374	65.983	67.593	69.202	70.811	72.421	74.030	75.639	77.249	78.858	40
50	80.467	82.077	83.686	85.295	86.905	88.514	90.123	91.733	93.342	94.951	50
60	96.561	98.170	99.779	101.39	103.00	104.61	106.22	107.83	109.44	111.04	60
70	112.65	114.26	115.87	117.48	119.09	120.70	122.31	123.92	125.53	127.14	70
80	128.75	130.36	131.97	133.58	135.19	136.79	138.40	140.01	141.62	143.23	80
90	144.84	146.45	148.06	149.67	151.28	152.89	154.50	156.11	157.72	159.33	90
100	160.93	162.54	164.15	165.76	167.37	168.98	170.59	172.20	173.81	175.42	100

KILOMETRES TO MILES

km	0	1	2	3	4	5	6	7	8	9	km
	mil	mil	mil	mil	mil	mil	mil	mil	mil	mil	
--		0.621	1.243	1.864	2.486	3.107	3.728	4.350	4.971	5.592	--
10	6.214	6.835	7.457	8.078	8.699	9.321	9.942	10.562	11.185	11.805	10
20	12.427	13.049	13.670	14.292	14.913	15.534	16.156	16.776	17.399	18.019	20
30	18.641	19.263	19.884	20.506	21.127	21.748	22.370	22.990	23.613	24.233	30
40	24.855	25.477	26.098	26.720	27.341	27.962	28.584	29.204	29.827	30.447	40
50	31.069	31.690	32.311	32.933	33.554	34.175	34.797	35.417	36.040	36.660	50
60	37.282	37.904	38.525	39.147	39.768	40.389	41.011	41.631	42.254	42.874	60
70	43.497	44.118	44.739	45.361	45.982	46.603	47.225	47.845	48.468	49.088	70
80	49.711	50.332	50.953	51.575	52.196	52.817	53.439	54.059	54.682	55.302	80
90	55.924	56.545	57.166	57.788	58.409	59.030	59.652	60.272	60.895	61.515	90
100	62.138	62.759	63.380	64.002	64.623	65.244	65.866	66.486	67.109	67.729	100

GALLONS (U.S.) TO LITRES

U.S. gal	0	1	2	3	4	5	6	7	8	9	U.S. gal
	L	L	L	L	L	L	L	L	L	L	
--		3.7854	7.5709	11.3563	15.1417	18.9271	22.7126	26.4980	30.2834	34.0638	--
10	37.8543	41.6397	45.4251	49.2105	52.9960	56.7814	60.5668	64.3523	68.1377	71.9231	10
20	75.7085	79.4940	83.2794	87.0648	90.8502	94.6357	98.4211	102.2065	105.9920	109.7774	20
30	113.5528	117.3482	121.1337	124.9191	128.7045	132.4899	136.2754	140.0608	143.8462	147.6316	30
40	151.4171	155.2025	158.9879	162.7734	166.5588	170.3442	174.1296	177.9151	181.7005	185.4859	40
50	189.2713	193.0568	196.8422	200.6276	204.4131	208.1985	211.9839	215.7693	219.5548	223.3402	50
60	227.1256	230.9110	234.6965	238.4819	242.2673	246.0527	249.8382	253.6236	257.4090	261.1945	60
70	264.9799	268.7653	272.5507	276.3362	280.1216	283.9070	287.6924	291.4779	295.2633	299.0487	70
80	302.8342	306.6196	310.4050	314.1904	317.9759	321.7613	325.5467	329.3321	333.1176	336.9030	80
90	340.6884	344.4738	348.2593	352.0447	355.8301	359.6156	363.4010	367.1864	370.9718	374.7573	90
100	378.5427	382.3281	386.1135	389.8990	393.6844	397.4698	401.2553	405.0407	408.8261	412.6115	100

LITRES TO GALLONS (U.S.)

L	0	1	2	3	4	5	6	7	8	9	L
	gal	gal	gal	gal	gal	gal	gal	gal	gal	gal	
--		0.2642	0.5283	0.7925	1.0567	1.3209	1.5850	1.8492	2.1134	2.3775	--
10	2.6417	2.9059	3.1701	3.4342	3.6984	3.9626	4.2267	4.4909	4.7551	5.0192	10
20	5.2834	5.5476	5.8118	6.0759	6.3401	6.6043	6.8684	7.1326	7.3968	7.6610	20
30	7.9251	8.1893	8.4535	8.7176	8.9818	9.2460	9.5102	9.7743	10.0385	10.3027	30
40	10.5668	10.8310	11.0952	11.3594	11.6235	11.8877	12.1519	12.4160	12.6802	12.9444	40
50	13.2086	13.4727	13.7369	14.0011	14.2652	14.5294	14.7936	15.0577	15.3219	15.5861	50
60	15.8503	16.1144	16.3786	16.6428	16.9069	17.1711	17.4353	17.6995	17.9636	18.2278	60
70	18.4920	18.7561	19.0203	19.2845	19.5487	19.8128	20.0770	20.3412	20.6053	20.8695	70
80	21.1337	21.3979	21.6620	21.9262	22.1904	22.4545	22.7187	22.9829	23.2470	23.5112	80
90	23.7754	24.0396	24.3037	24.5679	24.8321	25.0962	25.3604	25.6246	25.8888	26.1529	90
100	26.4171	26.6813	26.9454	27.2096	27.4738	27.7380	28.0021	28.2663	28.5305	28.7946	100

GALLONS (IMP.) TO LITRES

IMP gal	0	1	2	3	4	5	6	7	8	9	IMP gal
	L	L	L	L	L	L	L	L	L	L	
--		4.5460	9.0919	13.6379	18.1838	22.7298	27.2758	31.8217	36.3677	40.9136	--
10	45.4596	50.0056	54.5515	59.0975	63.6434	68.1894	72.7354	77.2813	81.8275	86.3732	10
20	90.9192	95.4652	100.0111	104.5571	109.1030	113.6490	118.1950	122.7409	127.2869	131.8328	20
30	136.3788	140.9248	145.4707	150.0167	154.5626	159.1086	163.6546	168.0005	172.7465	177.2924	30
40	181.8384	186.3844	190.9303	195.4763	200.0222	204.5682	209.1142	213.6601	218.2061	222.7520	40
50	227.2980	231.8440	236.3899	240.9359	245.4818	250.0278	254.5738	259.1197	263.6657	268.2116	50
60	272.7576	277.3036	281.8495	286.3955	290.9414	295.4874	300.0334	304.5793	309.1253	313.6712	60
70	318.2172	322.7632	327.3091	331.8551	336.4010	340.9470	345.4930	350.0389	354.5849	359.1308	70
80	363.6768	368.2223	372.7687	377.3147	381.8606	386.4066	390.9526	395.4985	400.0445	404.5904	80
90	409.1364	413.6824	418.2283	422.7743	427.3202	431.8662	436.4122	440.9581	445.9041	450.0500	90
100	454.5960	459.1420	463.6879	468.2339	472.7798	477.3258	481.8718	486.4177	490.9637	495.5096	100

LITRES TO GALLONS (IMP.)

L	0	1	2	3	4	5	6	7	8	9	L
	gal	gal	gal	gal	gal	gal	gal	gal	gal	gal	
--		0.2200	0.4400	0.6599	0.8799	1.0999	1.3199	1.5398	1.7598	1.9798	--
10	2.1998	2.4197	2.6397	2.8597	3.0797	3.2996	3.5196	3.7396	3.9596	4.1795	10
20	4.3995	4.6195	4.8395	5.0594	5.2794	5.4994	5.7194	5.9394	6.1593	6.3793	20
30	6.5593	6.8193	7.0392	7.2592	7.4792	7.6992	7.9191	8.1391	8.3591	8.5791	30
40	8.7990	9.0190	9.2390	9.4590	9.6789	9.8989	10.9189	10.3389	10.5588	10.7788	40
50	10.9988	11.2188	11.4388	11.6587	11.8787	12.0987	12.3187	12.5386	12.7586	12.9786	50
60	13.1986	13.4185	13.6385	13.8585	14.0785	14.2984	14.5184	14.7384	14.9584	15.1783	60
70	15.3983	15.6183	15.8383	16.0582	16.2782	16.4982	16.7182	16.9382	17.1581	17.3781	70
80	17.5981	17.8181	18.0380	18.2580	18.4780	18.6980	18.9179	19.1379	19.3579	19.5779	80
90	19.7978	20.0178	20.2378	20.4578	20.6777	20.8977	21.1177	21.3377	21.5576	21.7776	90
100	21.9976	22.2176	22.4376	22.6575	22.8775	23.0975	23.3175	23.5374	23.7574	23.9774	100

POUNDS TO KILOGRAMS

lb	0	.1	2	3	4	5	6	7	8	9	lb
	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	
--		0.454	0.907	1.361	1.814	2.268	2.722	3.175	3.629	4.082	--
10	4.536	4.990	5.443	5.897	6.350	6.804	7.257	7.711	8.165	8.618	10
20	9.072	9.525	9.979	10.433	10.886	11.340	11.793	12.247	12.701	13.154	20
30	13.608	14.061	14.515	14.969	15.422	15.876	16.329	16.783	17.237	17.690	30
40	18.144	18.597	19.051	19.504	19.958	20.412	20.865	21.319	21.772	22.226	40
50	22.680	23.133	23.587	24.040	24.494	24.948	25.401	25.855	26.308	26.762	50
60	27.216	27.669	28.123	28.576	29.030	29.484	29.937	30.391	30.844	31.298	60
70	31.751	32.205	32.659	33.112	33.566	34.019	34.473	34.927	35.380	35.834	70
80	36.287	36.741	37.195	37.648	38.102	38.555	39.009	39.463	39.916	40.370	80
90	40.823	41.277	41.730	42.184	42.638	43.092	43.545	43.998	44.453	44.906	90
100	45.359	45.813	46.266	46.720	47.174	47.627	48.081	48.534	48.988	49.442	100

KILOGRAMS TO POUNDS

kg	0	1	2	3	4	5	6	7	8	9	kg
	lb	lb	lb	lb	lb	lb	lb	lb	lb	lb	
--		2.205	4.409	6.614	8.818	11.023	13.228	15.432	17.637	19.842	--
10	22.046	24.251	26.455	28.660	30.865	33.069	35.274	37.479	39.683	41.888	10
20	44.092	46.297	48.502	50.706	52.911	55.116	57.320	59.525	61.729	63.934	20
30	66.139	68.343	70.548	72.752	74.957	77.162	79.366	81.571	83.776	85.980	30
40	88.185	90.389	92.594	94.799	97.003	99.208	101.41	103.62	105.82	108.03	40
50	110.23	112.44	114.64	116.84	119.05	121.25	123.46	125.66	127.87	130.07	50
60	132.28	134.48	136.69	138.89	141.10	143.30	145.51	147.71	149.91	152.12	60
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.76	171.96	174.17	70
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.01	196.21	80
90	198.42	200.62	202.83	205.03	207.23	209.44	211.64	213.85	216.05	218.26	90
100	220.46	222.67	224.87	227.08	229.28	231.49	233.69	235.89	238.10	240.30	100

POUNDS PER SQUARE INCHES TO KILOPASCALS

lb/in ²	0	1	2	3	4	5	6	7	8	9	lb/in ²
	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	
--	0.0000	6.8948	13.7895	20.6843	27.5790	34.4738	41.3685	48.2663	55.1581	62.0528	--
10	68.9476	75.8423	82.7371	89.6318	96.5266	103.4214	110.3161	117.2109	124.1056	131.0004	10
20	137.8951	144.7899	151.6847	158.5794	165.4742	172.3689	179.2637	186.1584	193.0532	199.9480	20
30	206.8427	213.7375	220.6322	227.5270	234.4217	241.3165	248.2113	255.1060	262.0008	268.8955	30
40	275.7903	282.6850	289.5798	296.4746	303.3693	310.2641	317.1588	324.0536	330.9483	337.8431	40
50	344.7379	351.6326	358.5274	365.4221	372.3169	379.2116	386.1064	393.0012	399.8959	406.7907	50
60	412.6854	420.5802	427.4749	434.3697	441.2645	448.1592	455.0540	461.9487	468.8435	475.7382	60
70	482.6330	489.5278	496.4225	503.3173	510.2120	517.1068	524.0015	530.8963	537.7911	544.6858	70
80	551.5806	558.4753	565.3701	572.2648	579.1596	586.0544	592.9491	599.8439	606.7386	613.6334	80
90	620.5281	627.4229	634.3177	641.2124	648.1072	655.0019	661.8967	668.7914	675.6862	682.5810	90
100	689.4757	696.3705	703.2653	710.1601	717.0549	723.9497	730.8445	737.7393	744.6341	751.5289	100

KILOPASCALS TO POUNDS PER SQUARE INCHES

kPa	0	1	2	3	4	5	6	7	8	9	kPa
	lb/in ²	lb/in ²	lb/in ²	lb/in ²	lb/in ²	lb/in ²	lb/in ²	lb/in ²	lb/in ²	lb/in ²	
--		.1450	.2901	.4351	.5801	.7252	.8702	1.0153	1.1603	1.3053	--
10	1.4504	1.5954	1.7404	1.8855	2.0305	2.1556	2.3206	2.4656	2.6107	2.7557	10
20	2.9007	3.0458	3.1908	3.3359	3.4809	3.6259	3.7710	3.9160	4.0610	4.2061	20
30	4.3511	4.4961	4.6412	4.7862	4.9313	5.0763	5.2213	5.3664	5.5114	5.6564	30
40	5.8015	5.9465	6.0916	6.2366	6.3816	6.5267	6.6717	6.8167	6.9618	7.1068	40
50	7.2518	7.3969	7.5419	7.6870	7.8320	7.9770	8.1221	8.2671	8.4121	8.5572	50
60	8.7022	8.8473	8.9923	9.1373	9.1824	9.4274	9.5724	9.7175	9.8625	10.0076	60
70	10.1526	10.2976	10.4427	10.5877	10.7327	10.8778	11.0228	11.1678	11.3129	11.4579	70
80	11.6030	11.7480	11.8930	12.0381	12.1831	12.3281	12.4732	12.6182	12.7633	12.9083	80
90	13.0533	13.1984	13.3434	13.4884	13.6335	13.7785	13.9236	14.0686	14.2136	14.3587	90
100	14.5037	14.6487	14.7938	14.9388	15.0838	15.2289	15.3739	15.5190	15.6640	15.8090	100

POUND FEET TO NEWTON-METRES

ft-lb	0	1	2	3	4	5	6	7	8	9	ft-lb
	N·m	N·m	N·m	N·m	N·m	N·m	N·m	N·m	N·m	N·m	
--		1.3558	2.7116	4.0675	5.4233	6.7791	8.1349	9.4907	10.8465	12.2024	--
10	13.5582	14.9140	16.2698	17.6256	18.9815	20.3373	21.6931	23.0489	24.4047	25.7605	10
20	27.1164	28.4722	29.8280	31.1838	32.5396	33.8954	35.2513	36.6071	37.9629	39.3187	20
30	40.6745	42.0304	43.3862	44.7420	46.0978	47.4536	48.8094	50.1653	51.5211	52.8769	30
40	54.2327	55.5885	56.9444	58.3002	59.6560	61.0118	62.3676	63.7234	65.0793	66.4351	40
50	67.7909	69.1467	70.5025	71.8584	73.2142	74.5700	75.9258	77.2816	78.6374	79.9933	50
60	81.3491	82.7049	84.0607	85.4165	86.7724	88.1282	89.4840	90.8398	92.1956	93.5514	60
70	94.9073	96.2631	97.6189	98.9747	100.3305	101.6863	103.0422	104.3980	105.7538	107.1096	70
80	108.4654	109.8213	111.1771	112.5329	113.8887	115.2445	116.6003	117.9562	119.3120	120.6678	80
90	122.0236	123.3794	124.7353	126.0911	127.4469	128.8027	130.1585	131.5143	132.8702	134.2260	90
100	135.5818	136.9376	138.2934	139.6493	141.0051	142.3609	143.7167	145.0725	146.4283	147.7842	100

NEWTON-METRES TO POUND FEET

N·m	0	1	2	3	4	5	6	7	8	9	N·m
	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	
--		.7376	1.4751	2.2127	2.9502	3.6878	4.4254	5.1692	5.9005	6.6381	--
10	7.3756	8.1132	8.8507	9.5883	10.3258	11.0634	11.8010	12.5385	13.2761	14.0136	10
20	14.7512	15.4888	16.2264	16.9639	17.7015	18.4390	19.1766	19.9142	20.6517	21.3893	20
30	22.1269	22.8644	23.6020	24.3395	25.0771	25.8147	26.5522	27.2898	28.0274	28.7649	30
40	29.5025	30.2400	30.9776	31.7152	32.4527	33.1903	33.9279	34.6654	35.4030	36.1405	40
50	36.8781	37.6157	38.3532	39.0908	39.8283	40.5659	41.3035	42.0410	42.7786	43.5162	50
60	44.2537	44.9913	45.7288	46.4664	47.2040	47.9415	48.6791	49.4167	50.1542	50.8918	60
70	51.6293	52.3669	53.1045	53.8420	54.5796	55.3171	56.0547	56.7923	57.5298	58.2674	70
80	59.0050	59.7425	60.4801	61.2176	61.9552	62.6928	63.4303	64.1679	64.9055	65.6430	80
90	66.3806	67.1181	67.8557	68.5933	69.3308	70.0684	70.8060	71.5435	72.2811	73.0186	90
100	73.7562	74.4938	75.2313	75.9689	76.7064	77.4440	78.1816	78.9191	79.6567	80.3943	100

DECIMAL AND METRIC EQUIVALENTS

Fractions	Decimal In.	Metric MM.	Fractions	Decimal In.	Metric MM.
1/64	.015625	.39688	33/64	.515625	13.09687
1/32	.03125	.79375	17/32	.53125	13.49375
3/64	.046875	1.19062	35/64	.546875	13.89062
1/16	.0625	1.58750	9/16	.5625	14.28750
5/64	.078125	1.98437	37/64	.578125	14.68437
3/32	.09375	2.38125	19/32	.59375	15.08125
7/64	.109375	2.77812	39/64	.609375	15.47812
1/8	.125	3.1750	5/8	.625	15.87500
9/64	.140625	3.57187	41/64	.640625	16.27187
5/32	.15625	3.96875	21/32	.65625	16.66875
11/64	.171875	4.36562	43/64	.671875	17.06562
3/16	.1875	4.76250	11/16	.6875	17.46250
13/64	.203125	5.15937	45/64	.703125	17.85937
7/32	.21875	5.55625	23/32	.71875	18.25625
15/64	.234375	5.95312	47/64	.734375	18.65312
1/4	.250	6.35000	3/4	.750	19.05000
17/64	.265625	6.74687	49/64	.765625	19.44687
9/32	.28125	7.14375	25/32	.78125	19.84375
19/64	.296875	7.54062	51/64	.796875	20.24062
5/16	.3125	7.93750	13/16	.8125	20.63750
21/64	.328125	8.33437	53/64	.828125	21.03437
11/32	.34375	8.73125	27/32	.84375	21.43125
23/64	.359375	9.12812	55/64	.859375	21.82812
3/8	.375	9.52500	7/8	.875	22.22500
25/64	.390625	9.92187	57/64	.890625	22.62187
13/32	.40625	10.31875	29/32	.90625	23.01875
27/64	.421875	10.71562	59/64	.921875	23.41562
7/16	.4375	11.11250	15/16	.9375	23.81250
29/64	.453125	11.50937	61/64	.953125	24.20937
15/32	.46875	11.90625	31/32	.96875	24.60625
31/64	.484375	12.30312	63/64	.984375	25.00312
1/2	.500	12.70000	1	1.00	25.40000